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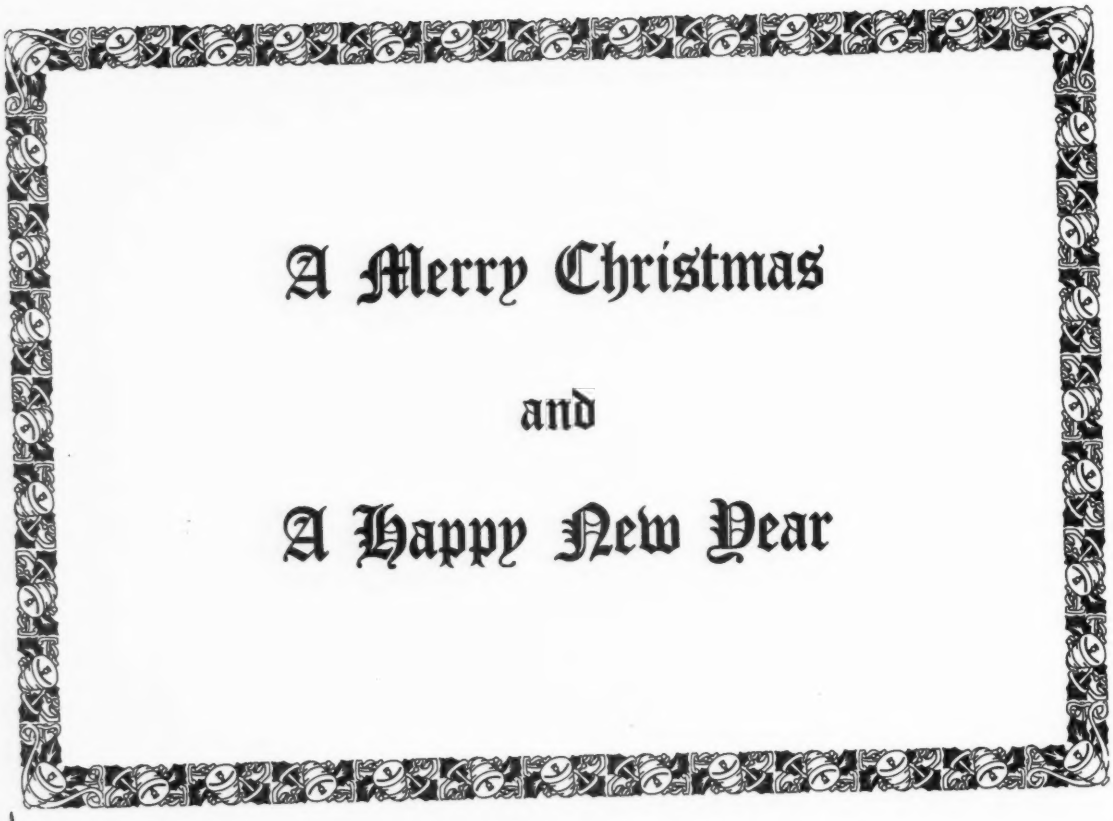
A Merry Christmas
and
A Happy New Year

Volume XX
1940

Number 79

COMMAND AND GENERAL STAFF SCHOOL

MILITARY REVIEW

QUARTERLY REVIEW OF MILITARY LITERATURE

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Fourth Quarter

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Books

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J'Accuse.—*By Andre Simone*

Where They Have Trod.—*By Lieutenant Colonel R. Ernest Dupuy*

Why England Slept.—*By John F. Kennedy*

The Story of the Pacific.—*By Hendrik Willem Van Loon*

Guilty Men.—*By "Cato"*

They Wanted War.—*By Otto D. Tolischus*

I Saw France Fall—*By Rene de Chambrun*

Pistols at Ten Paces.—*By William Oliver Stevens*

The Red Army.—*By Erich Woolenberg*

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Mission

The object of this publication is a systematic review of current military literature, through cataloging articles of professional value, in selected military and naval periodicals, in the domestic and foreign field.

Articles from foreign periodicals are treated by translations of titles and digests of contents; material of particular importance is covered more extensively in a section of "Foreign Military Digests."

A "Library Bulletin" Section lists books, recently accessioned, which are of particular significance.

This *Review* is published as a guide to modern military tendencies and to inspire vigorous thoughts on the subjects treated.

The opinions expressed and conclusions drawn in articles are *solely those of the authors and are in no sense official.*

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Acknowledgment

The editors desire to express their thanks and appreciation to those persons who have valuably assisted in the preparation of material for this issue. The work of contributors has been done in addition to their regular duties and on their own time. We are very grateful to the following officers for their generous donations:

LIEUTENANT J. DASHER: *Krasnaya Zvyezda* (29 May-14 June 1940)

LIEUTENANT COLONEL L. W. ROOKS: *Intelligence Lessons from the Battle of Waterloo*

MAJOR W. H. SPEIDEL: *Militärwissenschaftliche Mitteilungen* (May 1940); *Militär-Wochenblatt* (1 March-24 May 1940); *Panzertruppe* (May 1940).

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The Cover

Running with landed chute to prevent a spill.

Photo by U. S. Army Signal Corps.

BLÜCHER UNSEATED AT LIGNY

Intelligence Lessons from the Battle of Waterloo

[ADAPTED FROM AN ARTICLE BY CAPTAIN M. CARRIAS IN THE *Revue Militaire Francaise*, FEBRUARY 1932.]

Marshal Foch was once asked how a leader should conduct operations in war. He is reported to have replied:

"First, gain information of the enemy. Second, make a decision in accordance with the mission assigned. Third, carry out that decision in spite of all obstacles except a change in the enemy situation requiring a new decision."

According to Marshal Foch, then, the enemy situation constitutes one of the prime factors to be considered in arriving at all decisions. History substantiates this. Rare indeed are examples of victorious engagements where the victor has not troubled to obtain in advance the necessary enemy information on which to base his decision. One might go further and say that the majority of disastrous defeats can be attributed directly to a lack of enemy information or to an incorrect interpretation of it.

The Battle of Waterloo is a classic example.

The disaster of Napoleon at Waterloo was due in no small measure to the failure of Grouchy to intervene and hold off the Prussians in their movement to join Wellington and maneuver against the right flank of the French left wing. Now that the curtain has fallen on the drama, it is clear what Grouchy should have done.

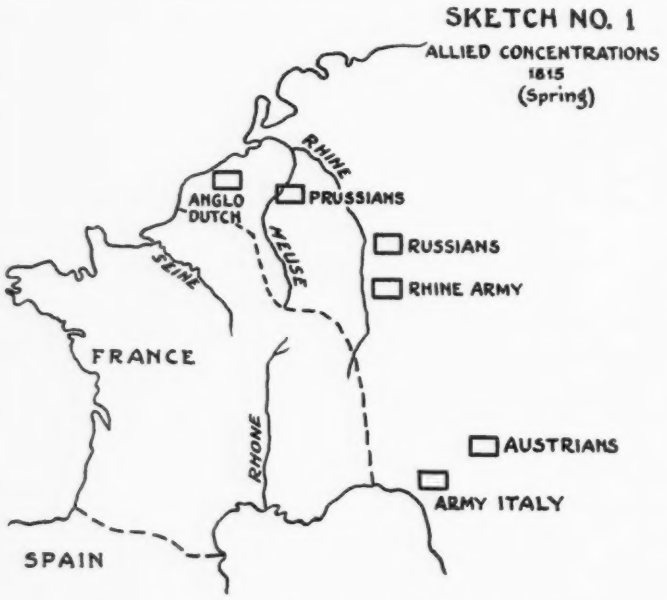
Could Grouchy, in spite of the vague and inadequate orders he received from Napoleon, and in spite of the fog of war which is always present to some extent on the battlefield, have known? The answer is yes.

Could Napoleon have learned in time of the Prussian maneuver? Again the answer is yes, provided only that information had been properly collected, evaluated, interpreted, and transmitted to him.

In this study will be presented as faithfully as the records permit the enemy information as it came in to Grouchy on the days of the 17th and 18th of June, 1815, and the deductions and use he made of it. Then will be shown the actual situation as it existed on the Prussian side. In this way, the reader will be able to see the errors made and how they came about.

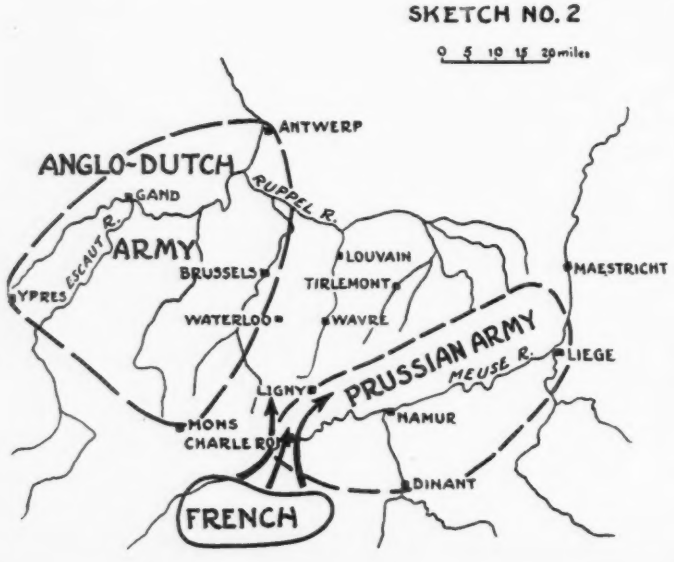
It will be well to review briefly the general situation. After Napoleon's return from Elba, the Allies at once moved against France with six converging armies. (See Sketch

No. 1.) The Anglo-Dutch under Wellington and the Prussians under Blücher concentrated in Belgium. The Russian and Upper Rhenish armies moved from the Rhine valley. The Army of Upper Italy and the Austrians threatened the



southeastern frontier. Napoleon's strategical plan was to move rapidly against these forces and defeat them in detail before they had time to act in concert. Accordingly, he decided to concentrate swiftly and secretly against the forces in Belgium, defeat them, and then move successively against the others as circumstances might warrant. By his mastery and genius he succeeded in assembling secretly an army of approximately 124,000 men in the area south of Charleroi (see Sketch No. 2), right in front of the Allied outposts. Wellington at this time disposed of 93,000 men in the area: Mons—Antwerp—Ypres, while Blücher had more than 117,000 Prussians in the area: Liége—Charleroi—Namur.

Napoleon's plan was to drive a wedge between the two forces, contain one while defeating the other, and then turn



on the one contained. To this end he had concentrated his force in three groups: a left wing under Ney, a right wing under Grouchy, and a central reserve. As the enemy would be found disposed in two main concentrations, one to the left and one to the right front after crossing the Sambre River in the vicinity of Charleroi, Ney was to advance against Wellington in the general direction of Brussels while Grouchy was to move against Blücher via Ligny and to the northeast of that place. The general reserve was to be held in a central location ready to be thrown against whichever enemy force was first gripped.

It was to be a typical Napoleonic maneuver from a central position, a maneuver executed successfully on previous occasions when the two wings were commanded by able generals, such as Lannes—generals who understood their roles of containing one enemy force while the other was being defeated. Napoleon rarely gave detailed, specific orders to his wing commanders, but allowed them full freedom of action within the strategic conception of the maneuver of the force as a whole. Unfortunately in this instance his wing commanders successively demonstrated their incapacity to act according to plan. And Napoleon only added to his difficulties by making Ney too strong initially at the expense of his general reserve and by ordering him to attack the Anglo-Dutch instead of fixing them in position. Consequently, when the Prussians were caught in a most disadvantageous position, the golden opportunity for an annihilating battle was lost for lack of adequate forces to bring against them.

The advance was begun on 15 June, 1815. After some sharp fighting at the bridges over the Sambre at Charleroi and immediately to the west, the crossings were forced and the two wings took up their advance to the north and northeast, respectively.

The Allies, taken by surprise, nevertheless adhered to their prearranged plan to concentrate in their respective forward areas, Wellington about Quatre-Bras, and Blücher at Ligny. (See Sketch No. 3 at end of study.) This had near-fatal results for when contact was made by the opposing main bodies at these two places on 16 June, the Allies were caught in only partial state of concentration and Napoleon from his central position found the opportunity he sought. He was in a position to contain either while striking the other, moving his maneuvering force by interior lines into the gap between them for action against the interior flank. Blücher, although in greater strength, was found in the more exposed position for his location at Ligny was farther south. Hence, by merely containing Wellington at Quatre-Bras, Napoleon was in a position to strike Blücher in front and on his exposed inner (right) flank.

This was the decision and the battle was fought out along these lines on 16 June. By 8:00 PM, as darkness was coming on, the Prussians had been defeated and driven back in the center. But the opportunity to achieve decisive results had been lost. This came about for two reasons. In the first place Napoleon delayed too long in moving up his general reserve and when he did, he brought it up too far to the east to strike Blücher's right. In the second place, due to a tragi-comedy of errors, Napoleon had been unable to induce Ney, himself attacking fiercely, to relinquish one of

his corps which was admirably placed to strike Blücher in flank and rear.

By dark, Ney, stronger than was necessary to contain the partially concentrated forces of Wellington at Quatre-Bras, and yet not strong enough to defeat them, had been repulsed. On the right, Blücher had been defeated and driven back in his center. As is usually the way with frontal attacks in open warfare, however, the action had been indecisive and Blücher could regain freedom of action merely by executing a night withdrawal to the north or northeast. The position of Ney's forces precluded a withdrawal to the northwest. In spite of this lost opportunity, Napoleon still had hopes, and with reason, for the success of his maneuver. Should the defeated Prussians now retire on their base in the direction of Liége, or could they be held east of the Dyle River (see Sketch No. 1), he would have an opportunity to turn the mass of the French forces against Wellington and crush him, provided only that Ney would grip and hold him at Quatre-Bras. This was the plan and the reader will readily appreciate the role of Grouchy on the right: to watch and follow Blücher closely; should he retire to the northeast, as was hoped, well and good; should he retire to the north, as was possible, to interpose his forces between Blücher and Wellington in such a way as to hold the former east of the Dyle, or failing that, strike him in flank should he attempt to turn to the west.

Let us see how well Grouchy played his part. By dark of the 16th, as has been said, his forces had ruptured the Prussian center. Two divisions of the Prussian II Corps, which had been identified there, had disappeared. During the night, the elements of the Prussian I Corps, as a covering force, were still holding Brye, while to the east, units of the III Corps remained in possession of Sombreffe and Tongrinne. The Prussian IV Corps, which had been billeted in Liége, had only been able to reach Baudeset on the 16th where it had halted for the night. It is important to note that the Prussians, when encountered, had had three corps in line: the I, II, and III Corps, in that order from west to east.

The French right wing was disposed at this time as follows: the I Cavalry Corps, the 14th Division of the IV Corps, and the II Cavalry Corps, in that order from right to left, held the front: Tongrinne—Sombreffe; in second line were the III Corps at La Haye, the IV Corps (less 14th Division), the Imperial Guard (less three regiments of cavalry), and the IV Cavalry Corps in the region of Ligny; and the VI Corps, part of the central reserve which had been brought up from Charleroi but not engaged during the day, south of Brye. Three regiments of Guard cavalry and the Imperial Headquarters were at Fleurus when Napoleon, returning from the battlefield, arrived there at 10:00 PM.

Now begins the end to Napoleon's hopes.

The first fateful step in this direction was his failure to order Grouchy immediately to pursue or even follow up the defeated Prussians, or even to execute vigorous reconnaissances in force. Instead, he went to bed. It is no longer the Napoleon of Ulm, Jena, and Austerlitz. It is a man ridden with disease and worn by fatigue—a man who let slip the fruits of victory to satisfy his need for rest.

Grouchy lacked the initiative to act independently and as a result the Prussians succeeded in breaking contact during the night. Napoleon, arising quite late the morning of the 17th, found himself in almost complete ignorance of their situation. Furthermore, Ney, in his reports, was quite vague as to the situation on the western front. Napoleon at this time was unable to make a decision. He lacked the necessary information of the enemy. He could not order a renewal of the attack against the Prussians—he didn't know where they were. Should he, now that they had regained freedom of action, order a vigorous pursuit of them by the bulk of his forces, he ran the double risk of finding the fresh Prussian IV Corps on his exposed right flank while the Anglo-Dutch, constantly receiving reinforcements, might overcome Ney and strike his left. He could scarcely move against the Anglo-Dutch until he knew that Ney had succeeded in fixing them in position and that the Prussians were out of the picture, for on the one hand he might find Wellington gone and on the other hand he might find Blücher on his right flank just as he was attempting to deal with Wellington. The situation was a delicate one and it was directly attributable to Napoleon's failure to act the night before. It now became of paramount importance to gain information of the enemy on which to base a decision.

About 7:00 AM, Napoleon learned of Ney's repulse the day before. At the same time, Grouchy reported that he had received information from Pajol, commanding the I Cavalry Corps, that the Prussians had withdrawn during the night and were in full retreat toward Namur and Liége; Pajol was pursuing in the direction of Namur. Napoleon ordered an infantry division in support of the I Cavalry Corps and also ordered reconnaissances in the direction of Quatre-Bras. Soult, Napoleon's Chief of Staff, in a message to Ney at this time, sums up Napoleon's estimate of the enemy situation after receipt of this information: "The Prussians are routed. Pajol pursues toward Namur and Liége. Thousands of prisoners have been taken. Prussia is doomed." Napoleon evidently attached considerable weight to Grouchy's report. But his need for information was not yet satisfied; he made no decision at this time.

At about 8:30 AM, Napoleon received word that the Anglo-Dutch still held the region of Quatre-Bras. About this same time, arrived a report from Pajol (I Cavalry Corps) dated 6:30 AM to the effect that he had charged the tail of an enemy column at Mazy on the Namur highway and had captured eight pieces of artillery and a large number of ration and baggage wagons from which he had taken the horses. According to the memoirs of Grouchy, Napoleon and his admiring staff now came to the conclusion without the least hesitation that the Prussians, for the time being abandoning their allies, were withdrawing down the Meuse via Namur in order to join their reserves. Apparently this news was accepted as confirming the earlier information. But still Napoleon withheld his decision.

Between 10:00 and 11:00 AM of the 17th, Quatre-Bras was reported as still occupied. Shortly after receipt of this information, Grouchy informed Napoleon that General Exelmann, commanding the II Cavalry Corps, reported as of 8:00 AM that he was pursuing a Prussian corps in the direction of Gembloux.

The reader will be left to decide whether Napoleon was not now doing some wishful thinking. In his view, the situation was now clarified: the defeated Prussians were pouring back to the southeast in the direction of Namur and to the

northeast in the direction of Gembloux; well and good, they had deserted Wellington and were out of the picture; Ney, in accordance with his orders, would attack the Anglo-Dutch at Quatre-Bras at any time now; fortune had delivered Wellington into his hands for now he was free to maneuver his mass against the Anglo-Dutch left. At 11:30 AM, he arrived at his decision and issued his orders. The mass of his available reserves was ordered to move against Wellington's left at Quatre-Bras. Grouchy, with the II and III Corps and the I and II Cavalry Corps, was given oral orders to pursue Blücher's retreating Prussians. When Grouchy offered the objection that the direction taken by Blücher was not yet clear and that the Prussians had too much of a start and might be difficult to locate, Napoleon flew into one of his habitual rages and informed his subordinate that he must carry out his orders, that it was up to him to find the enemy and complete their defeat by attacking them as soon as he encountered them, that he, Napoleon, was going to fight the English.

Regardless of whether Napoleon's estimate of the enemy situation and the enemy capabilities was correct, it is noteworthy that he withheld his decision during almost the whole of the morning of the 17th while he gathered enemy information—and that, in a rapidly moving situation where speed was of paramount importance. This is a striking example of the importance Napoleon, incontestably a military genius, placed on the intelligence factor in the commander's decision. He has been strongly criticized for this delay. He could do no better. He didn't know the enemy situation. *It is to court disaster to maneuver against an enemy represented by a question mark, especially when this enemy is a superior one.* On the other hand, there is little doubt that Napoleon could have had the information he sought much earlier had he taken steps to go after it the night before.

Grouchy, after sending warning orders to the III and IV Corps, returned to his command post at Ligny, where, shortly after noon, he received written confirmation of the oral orders of 11:30 AM:

"Push on to Gembloux with the cavalry corps of Generals Pajol and Exelmann (I and II), the light cavalry of the IV Corps, Teste's division, and the III and IV Infantry Corps.

"Clear up the situation in the direction of Namur and of Maestrich and pursue the enemy.

"Determine the direction of his march and inform me of his movements in such a way that I may know what he is trying to do.

"I am moving my headquarters to Quatre-Bras where the English still were this morning. Our communications will be by the main Namur road. If the enemy has evacuated Namur, write the general of the 2d Division at Charlemont to occupy it.

"It is important to determine what Blücher and Wellington are trying to do. Will they unite their armies in order to cover Brussels and Liége? Will they risk battle? In any case, hold your two infantry corps constantly united in a locality affording several avenues of retreat. Post some cavalry detachments between our two forces in order to maintain communication with my headquarters."

Thus in the short interval between the oral orders and the written orders to Grouchy, the Emperor seems to have had time to reflect a bit on the enemy capabilities. It is not impossible that Grouchy's word of caution had some effect. At any rate, it would now appear that he no longer entertained only the single idea that the whole Prussian army was retiring on Namur. On the contrary, he now gave consideration to the fact that Exelmann's report of a corps retiring in the direction of Gembloux might indicate a strategic retirement to the north or northwest to effect a junction with Wellington. This revision of his estimate must have taken place, for in addition to ordering Grouchy to move his force to Gembloux and to reconnoiter in the direction of Namur, from which locality Blücher might strike at the French lines of communication, he now orders Grouchy to penetrate the designs of Wellington and Blücher, particularly whether they will move to join forces in order to cover either Brussels or Liége. In the first estimate he arrived at a definite conclusion as to the enemy's intentions: the Prussians would retire down the valley of the Meuse in the direction of Liége—back on their line of communications. This must have been based largely on his own hopes and desires for the evidence he had certainly was not conclusive. In the second estimate he appears to have quit guessing as to what line of action the enemy would adopt and to have come to the more logical and rational viewpoint of considering all lines of action of which the enemy was physically capable.

As it relates to reconnaissance activities, the order seems adequate and satisfactory. As a tactical directive, however, it is obviously faulty. Had it been Napoleon's intention to have Grouchy interpose his force between the Prussians and Wellington, he should have stated this in so many words. It would then have been up to Grouchy to have located the Prussian right flank in order to accomplish this mission. Certain original accounts state that Napoleon did this very thing in the oral orders of 11:30 AM, but this remains uncertain. In any event, Napoleon's orders obliged Grouchy to reconnoiter in the direction of Brussels and had the latter possessed any strategical conception of the whole operation, it should have been obvious to him that to block off the Prussians was the implied mission. To translate this into terms of terrain, Grouchy should have planned to march on Tourinnes, Corbais, or Mousty, depending upon whether his reconnaissances showed that the Prussian right (west) flank was falling back on Jodoigne, Longueville, or Wavre.

It might be urged that Napoleon at this time should have ordered Grouchy's force into the valley of the Dyle River, as for example to Mousty or Wavre, where it would certainly be located between Wellington and Blücher. The answer is clear. The vagueness of the enemy situation precluded such action. In such a case Grouchy might have exposed his right or rear to the whole Prussian army had the latter reassembled to the east or southeast. Only two satisfactory solutions appear to have been open to Napoleon, viz., to direct Grouchy's operations step by step as the situation developed, or to give him a mission type order and trust to him to act in accordance with the needs of the situation. Considering the means of signal communications available at the time, the latter would appear to have been the better, provided that Napoleon had confidence in Grouchy. This is

another example of the importance of the intelligence factor in the commander's decision.

At 3:30 PM, while Vandamme's III Corps was moving up to take its place at the head of the column for the march on Gembloux, Grouchy received two messages, one from Pajol (I Cavalry Corps), the other from Exelmann (II Cavalry Corps).

Pajol's message, dated at noon of the 17th, after repeating the information transmitted earlier in the day relating to his having charged the tail of a column at Mazy on the Namur road, stated that the enemy was retreating to the east toward St. Denis and Leuze in order to reach the road leading from Namur to Louvain. The reader will note that this direction was not in accord with Pajol's first report that the Prussians were in full retreat toward Namur and Liége for now they might as reasonably have the intention of moving north on Louvain or northwest on Brussels as east on Liége. The message went on to say that he, Pajol, had information that considerable artillery was also leaving Namur via the Louvain road and that he, Pajol, was marching at once on Leuze to cut that road.

Exelmann's report read: "Your Excellency, I have had the honor to inform you this morning of my movement on Gembloux in order to follow the enemy massed at that place. I have observed him up to the present time and have noted no movement. His army is on the left bank of the Orneau. On the right bank, he has only one battalion . . . I shall follow at once any move he may make."

To sum up these two messages: The Prussians formerly reported as retiring to the southeast on Namur had changed direction to the northeast; Namur appeared to be in course of evacuation to the north; a strong force, possibly a whole corps, had taken position at Gembloux. Grouchy, mentally inactive, seems not to have reacted to this important information in any way. Instead of reporting it to the Emperor and taking appropriate action himself, he merely placed himself at the head of the III Corps which was leading the march and moved on toward Gembloux at the speed of his infantry. His advance was further delayed when at 2:00 PM a heavy downpour of rain began. The troops slogged forward in water half-way up to their knees. Grouchy, like the least of his soldiers, philosophically suffered the rain to beat on his back, submitting himself to the fate of the gods as completely as they.

Grouchy finally arrived at Gembloux at about 7:00 PM. Here he was told by inhabitants, who had served as guides for an important enemy force that afternoon, that the Prussians were marching on Wavre. One of his aides, of Belgian origin, reported that he had learned from the civilians of the countryside that a force of about 30,000, moving in two columns, passed through Sauvenière, one taking the direction of Sart-à-Walhain, the other, longer, column taking the direction of Perwez. All were asking the way to Brussels.

A little later, Grouchy received a report from Vandamme who by this time had pushed forward his corps (III) some two-and-one-half miles to the north of Gembloux. The report stated that General von Thielmann and General von Borstell were present with the forces which had arrived at Gembloux at about 6:00 AM and departed at about 10:00 AM; that these two generals were reported by inhabitants to have made inquiries as to the distances to Wavre, Perwez, and Hannut (12 miles east of Perwez on the road which leads to Liége and on to Maestricht); and that they had been heard to say that the Prussian forces had suffered 20,000 casualties in the action of the afternoon before.

Grouchy had information at this time that Thielmann was in command of the Prussian III Corps and that Borstell was on the staff of the Prussian II Corps.

At this point the reader is asked to estimate the enemy situation as known to General Grouchy at this time and to compare it with that of Grouchy himself.

At 10:00 PM, Grouchy reported to Napoleon as follows:

"Sire, I have the honor to report that I now occupy Gembloux where the IV Corps is just arriving; the III Corps is in front of this village, and a part of my cavalry at Sauvenière.

"The Prussian Corps, about 30,000 men, which was still here this morning, has made good its retreat in the direction of Sauvenière. According to divers reports it appears that upon arriving at Sauvenière, a part of the Prussian army has divided: one column moving on Perwez, the other column taking the road to Wavre via Sart-à-Walhain. It might be inferred from this that some of the Prussian corps are going to join Wellington, and that others are retiring on Liége.

"One Prussian column with some artillery, in leaving the Fleurus battlefield took the road to Namur. . . .

"General Exelmann has been ordered to push forward six squadrons on Sart-à-Walhain and three on Perwez this evening.

"If I learn from reports which I hope to receive during the night that important enemy forces are moving on Wavre, I shall follow them in that direction and attack them the moment I have encountered them."

The reader will note that this report takes no account of the reliable report received from Pajol at 3:30 PM that the column encountered at Mazy on the Namur road had turned northeast in order to gain the Namur—Louvain road and that considerable artillery was reported in march to the north from Namur in the direction of Louvain. In this respect the report was inexact. The hypothesis that the enemy might withdraw on his base at Namur, which should have been rejected definitely as early as 3:30 PM, still remained a possibility in the mind of Grouchy as late as 10:00 PM. Moreover, the report was misleading in that it mentioned only the one enemy capability, viz., that one part might be marching to join Wellington, the other retiring on Liége. It failed to consider the possibility that the forces reported in movement to the northeast on Perwez might also be moving on Wavre merely taking the circuitous route in order to take full advantage of the road net.

About midnight, Grouchy received the following report from General Bonnemains who commanded the cavalry reconnaissance in the direction of Sart-à-Walhain:

"General, the enemy occupied the village of Tourinnes until dark this evening. He had, according to inhabitants, much infantry and some cavalry and was covering the march of a convoy. I kept them under observation until dark and then moved back to Baudeset. . . .

"A peasant whom I sent from Sart-à-Walhain to Tourinnes, assures me at this instant that the enemy left the neighborhood of Tourinnes at 8:15 PM."

Between 2:00 and 3:00 AM, 18 June, Grouchy, still at Gembloux, received the following additional information which had been gained at Sart-à-Walhain:

"About 30,000 or 40,000 men have passed through Sart-à-Walhain moving in three columns. The movement lasted from 9:00 AM to 3:00 PM. They had about 60 cannon.

"The [Prussian] III Corps was identified. It left requisitions signed by its quartermasters. [This last statement was evidently in error for Grouchy in a later report indicates that the requisitions had been left by units of the IV Corps.] Prince Auguste was with this column which had come originally from Hannut and from the vicinity of Liége. The passage through this village [Sart-à-Walhain] was completed at 3:00 PM, the 17th. The tail of the column is at Corroy. Everything is moving on Wavre. The wounded are being sent off via the old Roman road to Liége and Maestricht. It is believed that this movement comprised three corps, the II and III Corps for a certainty, and probably the I Corps. The I and II Corps took part in the Battle of Fleurus. They have announced their intention of giving battle again near Brussels where it is their present intention to reassemble. The artillery came via Grand Leez. The best road to Wavre is via Corbais."

From this it would appear that part or all of the II, III, and IV Corps had passed through Sart-à-Walhain in the direction of Wavre, clearing Sart-à-Walhain at 3:00 PM, the afternoon before. The IV Corps was known to have been bivouacked in the region of Liége and to have arrived from that place too late to take part in the fighting of the 16th. Knowing the direction of march of the III and IV Corps, and probably that of the II Corps, it would be reasonable to look for the I Corps on roads more to the west. The reader will recall that during the fighting of the 16th, the I, II, and III Corps had been identified in that order from west to east.

The enemy, defeated at Ligny on the 16th, had been allowed to break contact and slip away. Dawn of the 18th found Grouchy still in ignorance of the location of the Prussian right (west); still in doubt as to the direction taken by the mass of the enemy.

Not only had Grouchy failed to act energetically and decisively on the 17th, his plans now offered little better for the 18th. The III Corps was to put itself in movement on Sart-à-Walhain at 6:00 AM and the IV Corps was to march on the same place beginning at 8:00 AM. Exelmann's II Cavalry Corps was to act as advance guard for the III Corps moving to the northwest. Pajol's I Cavalry Corps was to move at daybreak from Mazy on Tourinnes via Grand Leez sending a strong detachment to reconnoiter in the direction of Namur. A staff officer was sent to find out whether any enemy columns had been seen at Mousty.

At 3:00 AM, after having issued his instructions for the morrow, Grouchy, from Gembloux, addressed a report to Napoleon in part as follows:

"Sire, all information that I have confirms the belief that the enemy is retiring on Brussels with a view of concentrating there or of giving battle after uniting with Wellington.

"Reports from Pajol indicate that Namur is evacuated.

"The Prussian I Corps appears to be moving on Corbais and the II Corps on Hottomont. They appear to have left Tourinnes at 8:30 last night but couldn't have gotten far because of the bad weather.

"I am this instant leaving for Sart-à-Walhain from where I shall go on to Corbais and Wavre. . . ."

It could not, of course, be certain at this time that the enemy was retiring on Brussels. Grouchy reports the evacuation of Namur eleven hours after he had this information. He must have drawn on his imagination as to the movements of the I and II Corps because the information he had certainly did not warrant any such definite report, particularly in respect to the I Corps. He omitted any mention of the III and IV Corps which had passed through the region of Sart-à-Walhain, a fact which Grouchy was in a position to know almost with certainty. He gave no information as to the enemy rear guards which had been located. In sum, except for the information concerning Namur, which was stale, his report was inexact and incomplete.

At 6:00 AM, Vandamme's III Corps took up the march on Sart-à-Walhain and at 8:00 AM, Gerard's IV Corps followed suit. At about 7:00 AM Grouchy took position at the head of the III Corps. The weather was fine but the road was in execrable condition and it was not until 10:00 AM that Grouchy reached Sart-à-Walhain—five miles in four hours. At this point he was met by the staff officer who had been sent to Mousty and who reported that that place was free of the enemy.

Now came to hand a piece of *unverified* information from a source which must always be considered as unreliable and which Grouchy, as will appear, accepted at face value. The owner of the house in which he established his command post imparted the following:

"Enemy wounded are pouring back on Liége, via Jodoigne and Tirlemont. Most of the effectives and those who did not take part in the Battle of Fleurus are marching on Wavre; a few on Tirlemont. The bulk of the enemy are camped on the Chyse plain near the Namur—Louvain road about six miles from Jodoigne. *This is positive information.* It is there that the enemy appears to intend to concentrate. They say that they withdrew from the battlefield voluntarily and that they will retire no farther than is necessary to effect a junction with Wellington when they will again accept battle."

Obviously this information is self-contradictory. It asserts that the bulk of the enemy is marching on Wavre and in the very next sentence refutes this statement by affirming that the mass are camped on the Chyse plain—the direction taken by the smaller element. An unverified report must be considered as doubtful, and more especially one from such a source, until it is confirmed.

Grouchy, slow to transmit reliable information, as, for example, the evacuation of Namur, was quick to send unverified information. A message was sent at once (11:00 AM, 18 June) to the Emperor. In part, it read:

"Sire, I lose not a moment in transmitting to you information I have received here. I regard it as positive. The I, II, and III Corps of Blücher are marching in the direction of Brussels. Two of these corps passed through Sart-à-Walhain or a short distance to the right of it. They moved in three columns approximately abreast of each other. Their time length was six hours. The columns which passed within sight of Sart-à-Walhain were estimated as at least 30,000 men with fifty or sixty cannon.

"One corps coming up from Liége joined up with those which fought at Fleurus (see inclosed requisition as proof). Some of the Prussians in my front are moving toward the Chyse plain which is situated near the Louvain road six miles from that city.

"It would seem to be their plan to concentrate there, or to attack me, or possibly to unite with Wellington, a project which has been announced by their officers.

"Tonight, I will have my command completely concentrated at Wavre between the Prussians and Wellington, who no doubt is in retreat before Your Majesty.

"Most of the information on which this report is based has been furnished by the proprietor of the house where I am stopping to write to Your Majesty. This officer has served in the French army, has been decorated, and seems entirely devoted to our cause."

A whole day after he had received the mission to follow the enemy and determine the direction of his withdrawal, Grouchy still remained in the dark. He was still groping blindly. It is noteworthy that he states in his message to Napoleon that he is going to concentrate his force at Wavre between the Prussians and Wellington. Perhaps Napoleon had, after all, ordered him to do this in the oral orders of 11:30 AM the day before. In any event, despite the fact that Grouchy had good evidence that "everything was moving on Wavre" and further, despite the fact that he reports it as one of the three enemy capabilities that the Prussians may be planning to join forces with Wellington in the region of Brussels, it is evident that in his own mind he had concluded definitely that they were going to concentrate on the Chyse plain, a direction completely away from Brussels. Only in that case would Grouchy, at Wavre, be situated between Wellington and Blücher. Were the Prussians to continue on to the northwest, crossing the Dyle in the vicinity of Wavre, and then move on Brussels or Waterloo, Grouchy's action in moving on Wavre would merely put him up against the enemy's rear guards with a difficult obstacle to force and no chance of interposing his force between the two Allies. It seems incredible that a man could so accurately paint the picture and point the danger and then, seemingly deliberately, choose to ascribe to the enemy a contrary line of action in keeping with his own hopes and desires. Yet this is what Grouchy must have done for in no other way could he have justified his action, or more accurately, his lack of it.

His report terminated, Grouchy, well satisfied with himself, sat down to lunch. No lack of energy here. But just as he began the attack on his strawberries, a violent cannonading was heard from the direction of Mont St. Jean. Great excitement ensued. General Gerard, commander of the IV Corps, coming in shortly, demanded imperiously that Grouchy march to the sound of the guns. A courier from Exelmann (II Cavalry Corps) rushed in with the news that a strong enemy rear guard was in position south of Wavre; that it was evident that the Prussians had crossed the Dyle during the night and morning and were marching west; that Exelmann proposed to cross to the left bank of the Dyle at Ottignies and attack these forces in flank.

Grouchy, still thinking of the concentration reported on the Chyse plain, ordered Exelmann to move instead on Longueville. This done, he ordered the III Corps to make a frontal attack on the enemy rear guard south of Wavre and seize that place. Noting that the cannonade was increasing in intensity, Grouchy then mounted his horse and galloped madly towards the Dyle. It was apparent that a general engagement was in progress in the vicinity of Mont St. Jean. Turning rapidly back toward Wavre, he was met by a messenger from the Imperial Headquarters:

Ferme Du Caillou, 18 June, 1815, 10:00 AM.

"Marshal, the Emperor has received your last report dated from Gembloux. You speak only of two Prussian columns which moved via Sauvenière and Sart-à-Walhain. Other reports, however, say that a third column, very strong, was also in movement on Wavre via Gery and Gentinnes.

"The Emperor charges me to inform you that at this moment he is going to attack the English who have taken position at Waterloo, near the Forest of Soignes. In this circumstance, His Majesty desires that you direct your movements on Wavre so as to draw nearer us, that you keep yourself informed of the situation and secure the routes of communications between us, pushing before you the Prussian corps which have taken that direction and which must have halted at Wavre where you should arrive at the earliest possible moment.

"You will follow up the enemy columns which are retiring on your right with some light, mobile troops in order to observe their movements and gather up their stragglers.

"Inform us at once of your dispositions and of the progress of your advance as well as any information you get of the enemy. Do not fail to secure the communications by which you can join us. The Emperor insists on frequent reports from you."

The allusion contained in this order was to the report of Grouchy dated from Gembloux at 10:00 PM of the previous evening. At 9:00 PM that same evening, a detachment sent by Napoleon to maintain contact with Grouchy had reported a strong enemy column in movement towards Wavre via Gery and Gentinnes. This was information which Grouchy himself could have obtained had he but reconnoitered in that direction.

In compliance with the above orders, Grouchy rushed the attack on Wavre. At about 4:00 PM, while en route to the battlefield, he received word from the III Corps that some Prussian columns had been observed on the west bank of the Dyle moving in the direction of the cannonade. Grouchy sent back word to this corps not to become alarmed and himself continued on his way, serenely confident that all was well: the bulk of the Prussians was to be found to the east, not the west. Why could not he realize that the Prussians were likely moving to support Wellington? Had he not in his last three intelligence estimates rendered to Napoleon

given that very action as one of the lines of action open to the enemy? Did not the two reports now at hand, the one from Exelmann (II Cavalry Corps), the other from Vandamme (III Corps), constitute conclusive evidence that such was in fact the plan the Prussians had adopted? Why was the unverified word of an unknown civilian that the Prussians were massing their forces on the Chyse plain given greater weight than that of competent military observers on the spot? The reader may well ponder this matter for it is one of the strangest, and incidentally one of the most dangerous, of the phenomena of war that a commander, once persuaded that the enemy is going to act as it is hoped he will act, thereafter will accept gladly all evidence which confirms his hypothesis and reject as false that which is not in accord with it.*

To return to the narrative, the fight before Wavre developed slowly. Several hours were lost in extricating the III Corps from an awkward position it had taken. At 7:00 PM, arrived another message from Soult, Napoleon's Chief of Staff, dated at 1:00 PM. After reiterating previous instructions, this message concluded with a startling postscript as follows:

"We have just received a report that von Bulow [Prussian IV Corps] is about to attack our right. We think we can see him now on the heights of Saint-Lambert. Move to join us without an instant's delay. You can take him in the very act of delivering his attack and crush him."

Grouchy hurried to the rescue. Putting himself at the head of the IV Corps, he rushed it across the Dyle at Limale. By 11:00 PM, after a bloody battle in the dark, he had made himself master of the plateau to the west of that place.

A deadly silence reigned at Waterloo. He was much too late. Since 9:00 PM the Imperial Army had been in disorganized flight to the south.

So far as the records go, the reader has seen the important enemy information available to Grouchy and the deductions and use he made of it. Let us now move over to the Prussian side and see what was actually going on. Let us go back and trace the movements of Blücher's army.

We have seen how at the close of fighting on 16 June the Prussian center at Ligny had been ruptured and the II Corps, which occupied this part of the line, had been forced to flee to the north. This had forced the I Corps on the Prussian right, which had launched several fierce but unsuccessful counterattacks during the afternoon and which had suffered heavily, to fall back to Brye, while the III Corps withdrew to Sombreffe. Losses had been about 20,000 out of about 82,000 engaged. This included about 8,000 missing. Small bands were fleeing in all directions, notably in the direction of Namur.

The decision was now made to withdraw from the Ligny battlefield and retire on Wavre. Accordingly, the I and II Corps, covered by a rear guard at Brye, assembled in the area: Tilly—Gentinnes—Mellery. Beginning at daybreak the 17th, the I Corps, which had suffered most heavily, retired unmolested via the road: Gentinnes—Mont St. Guibert —La Baraque—Limal, and bivouacked on the left bank of the Dyle near Bierge.

The I Corps was followed closely by the II Corps which, moving by the same road, bivouacked on the right bank of the Dyle opposite Wavre. The withdrawal of these two corps was covered by a brigade of cavalry left in position between Tilly and Gentinnes and a detachment of infantry at Mont St. Guibert.

The III Corps, covered by one of its divisions, withdrew unmolested from Sombreffe to Gembloux, where it arrived at 6:00 AM. It remained at Gembloux until shortly before 2:00 PM when, covered by a rear guard, it retired via Corbais to La Bavette (2 miles northwest of Wavre), where it arrived some time after dark of the 17th.

The IV Corps moving up from Liége, as has been seen, had arrived too late on the 16th to participate in the battle and had halted at Baudeset. Between 10:00 and 11:00 AM, 17 June, it moved in two columns, one via Tourinnes and one via Corroy, to Dion-le-Mont where it arrived at about 10:00 PM.

Staff officers sent out by the Prussian army headquarters turned all detachments in flight from the Ligny battlefield back on Wavre. This explains how the column in flight on Namur via Mazy came to turn north on St. Denis. The army supply train, which had been directed from Namur on Gembloux at daybreak, the 17th, was redirected via Grand Leez and Perwez on Wavre where it arrived without interference at 5:00 PM. This was a most fortunate circumstance for the I and II Corps were practically without ammunition.

To sum up, the Prussian retirement on Wavre was made in five main columns: the I and II Corps in the west column via Mont St. Guibert, the III Corps via Corbais, the IV Corps in two columns via Corroy and Tourinnes respectively, and the supply trains in the east column via Grand Leez and Perwez.

At this time, that is to say, up until nearly midnight of the night 17-18 June, the further action of the Prussian Army remained undirected.

Now let us join Napoleon and follow briefly the operations of his western wing. After issuing his oral orders to Grouchy at 11:30 AM, 17 June, he went immediately to Quatre-Bras where, to his disgust, he found that Wellington's army, too, had been allowed to slip from Ney's grasp. Despite frightful weather, Napoleon at once took up the pursuit and by dark had uncovered the Anglo-Dutch army in position on the high ground of Mont St. Jean, just south of the Forest of Soignes.

From the information he had, Napoleon was convinced at this time that the beaten Prussians were incapable of coming to Wellington's assistance. He planned, therefore, to attack the Anglo-Dutch without delay. He was chiefly concerned lest Wellington continue to retire. But from reports which he received during the night, this fear was dispelled.

During the night 17-18 June, having made his decision to attack Wellington on the morrow, Napoleon sent two important dispatches to Grouchy. The first, sent at about 10:00 PM, informed Grouchy of the situation and the decision and directed him to detach before daybreak a force of 7,000 men of all arms and 16 pieces of artillery on Saint Lambert to join and operate with the right of the main force. As soon as it was determined that the Prussians had evacuated Wavre and were continuing to retire on Brussels or any other direction,

*—Paraphrased from a statement by General von Schlieffen.

Grouchy was to march with the remainder of his force to support his detachment at Saint Lambert.

The second dispatch, sent at 4:00 AM, repeated the instructions contained in the first.

All available evidence indicated that neither message ever reached Grouchy. Communications, then as now, were the weakness in the exercise of command.

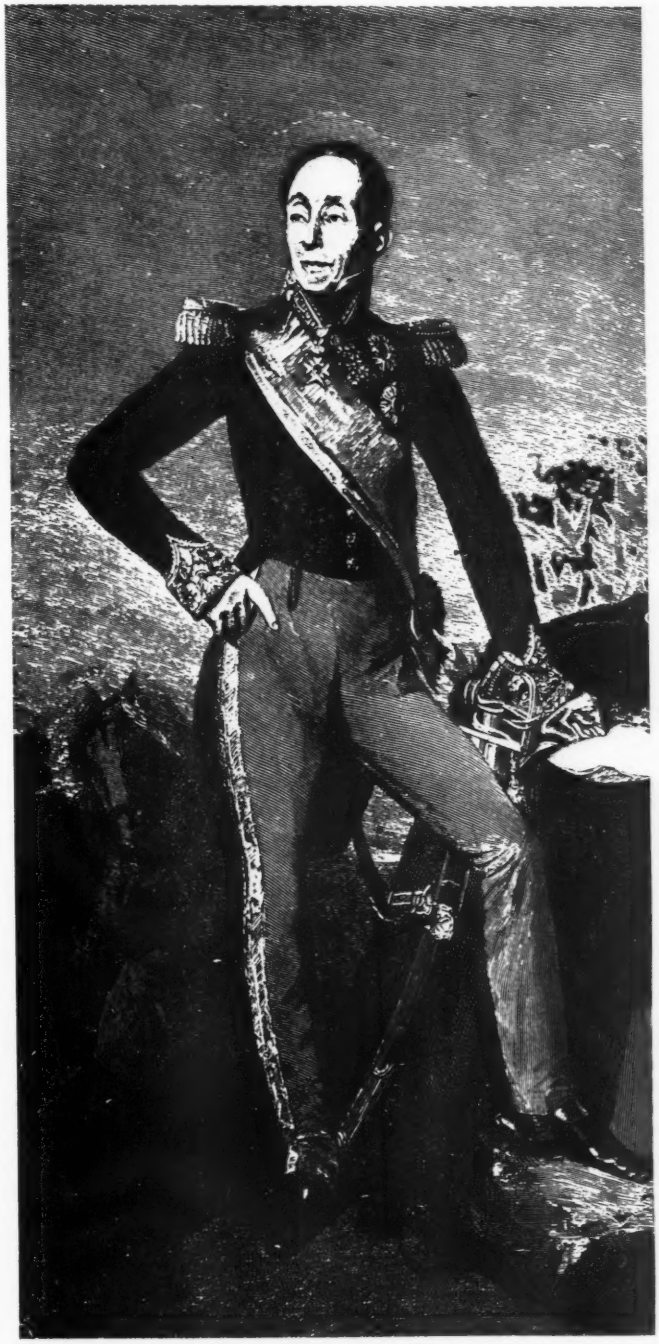
And during this same night, Napoleon was the victim of another weakness: the failure to report important information in time to be of use. It was not until quite late the morning of the 18th that Prince Jerome, brother of Napoleon, reported a matter which had come to his ears the evening before. A servant at the inn at Genappe, where Wellington and his staff had lunched on the 17th, stated to Prince Jerome that during the meal he had overheard them discussing the matter of a junction of the two allied armies in front of the Forest of Soignes, the Prussian army moving via Wavre. Napoleon dismissed this belated news as nothing but idle chatter or mere speculation; he estimated that such a junction was impossible before two days. Here we must chalk up an error against Napoleon. By this time he had received Grouchy's 10:00 PM report, which with other information that he had, included a Prussian retirement to the north on Wavre and on Perwez. It was easily possible that the Prussians might turn west from Wavre and now that he had evidence that such a move was under consideration, there can be no doubt that he should at once have notified Grouchy of this information and directed him to maneuver to block any such move, i.e., to cross to the left bank of the Dyle and interpose his force between the two Allies or, failing that, strike the Prussians in flank. At the same time, it should be noted that the information was too late to be of any real value for considering the slowness of the means of communication available at that time, it is unlikely that Grouchy could have acted on it in time. It should be noted further that Prince Jerome could have gotten this information to Napoleon by 9:00 or 10:00 PM the evening before.

By this time it was approaching 10:00 AM of the 18th and Napoleon was going ahead with his preparations for the attack. Now arrived Grouchy's 3:00 AM report from Gembloux, reporting the enemy in retreat on Brussels. Accepting this at face value, Napoleon, at 10:00 AM, merely sent back word to Grouchy to continue his movement on Wavre (see page 11).

But by 1:00 PM, he must have begun to see the light, to realize that from Wavre the enemy would turn west and menace his right, for at that hour he addressed new orders to Grouchy confirming the earlier instructions but enjoining him in no case to allow the Prussians to separate his force from the main army and to attack any enemy force which might attempt a maneuver against Napoleon's right flank.

These new orders had not yet left the command post when Napoleon, scanning the horizon for the last time before giving the command for the attack, perceived in the direction of Saint Lambert a shadowy mass in movement to the west. All eyes were turned upon it. At first it was thought to be a detachment from Grouchy's forces but shortly arrived an escort bringing in a captured messenger of the Prussian Black Hussars. One glance at his dispatches and the whole picture was made plain. The force in movement in the direction of Saint Lambert was the advance guard of the Prussian IV Corps which was moving up with 30,000 men to support Wellington.

A postscript was hastily added to the message to Grouchy (see page 12) directing him to move at once and strike the enemy column in flank. This done, Napoleon turned to Soult, his chief of staff, and said, "This morning our chances were ninety to ten; the arrival of Bulow loses us thirty; but we still have a sixty to forty chance and if Grouchy corrects the horrible mistake he made yesteday in dallying at Gembloux and sends his detachment up rapidly, our victory will be even more decisive, for Bulow's corps will be completely lost."



MARSHAL EMMANUEL, MARQUIS DE GROUCHY

The signal was given and the French advanced to the attack.

It is no part of this study to detail the events of the afternoon culminating in the final disaster to Napoleon. Suffice it to say that Grouchy did not come and at 8:30 PM, the Prussian I Corps, which had followed the IV Corps to the scene of action, succeeded in shattering the French right just at the time the final attack of the Imperial Guard was breaking against the Anglo-Dutch position. Panic ensued. Scattered remnants fled from the field. The battle was lost; and with it, the First Empire.

At the beginning of this article it was stated that the disaster of Napoleon at Waterloo was due in no small measure to the failure of Grouchy to intervene and hold off the Prussians while Napoleon was attacking Wellington. Grouchy's mission, whether expressed or implied, was to maneuver his forces in such a way as always to be in position either between the two Allies or to strike the Prussians in flank should they turn to the west. Thus, Grouchy's entire maneuver of the 17th and 18th of June, 1815, should have been based on the movements of the Prussians. For him, then, timely and adequate intelligence of the enemy was the key to the situation, the unknown quantity "X" which could only be obtained by intensive, thorough reconnaissance. In spite of the fact that the Prussians were allowed to break contact during the night following the Battle of Ligny and interpose rear guards between themselves and the French, thereby gaining considerable time, Grouchy should have obtained the information he needed. And not only that, regardless of his lack of activity in conducting reconnaissance, had he had the proper conception of his mission, and had he correctly evaluated and interpreted the information he received, he was still in position to remedy the situation at any time up to 9:00 AM of the 18th and very likely up to noon.

The four most important steps in the production of military intelligence are: (1) the collection of information, (2) its evaluation, (3) its interpretation, and (4) its dissemination as military intelligence. Let us examine briefly the intelligence operations of the Battle of Waterloo, chiefly those of Grouchy, under these four headings.

Under the heading of "collection of information," to mention only the more glaring errors, must be listed the following:

Napoleon's failure to order aggressive reconnaissance, after the Battle of Ligny.

Grouchy's failure to act independently in this same matter.

Grouchy's failure on 17 June to reconnoiter the roads leading north from the region of Mellery and Gentinnes. A movement to the north was a possibility and we now know that the entire Prussian I and II Corps were strung out during the entire day on the one road leading north from Gentinnes to Wavre. It is inconceivable that a cavalry reconnaissance (Grouchy had plenty of cavalry) could have failed to observe this movement in considerable detail. Not until the morning of the 18th, did Grouchy show any curiosity in this direction—then he sent a staff officer to Mousty.

Grouchy's failure on the 17th to secure prisoners for identifications and questioning. A beaten enemy was retreating before him. Beyond question, he could have had prisoners merely for the pains of going after them and it is altogether likely that in this way he could have had precise information as to the composition and march objective of each of the five columns in his front.

Grouchy's failure on the morning of the 18th to reconnoiter in the direction of Wavre and to the west of that place, this despite a growing accumulation of evidence that the Prussians had moved in that direction, and further, despite the fact that under his mission he was duty bound to determine the western limit of the Prussian movement.

The failure of Grouchy and his subordinates properly to question civilians on arrival in Sart-à-Walhain the morning of 18 June. The entire Prussian IV Corps had passed through this village, and yet no one seems to have thought to ask the civilians as to the numbers on the Prussians' shoulder insignia.

"Evaluation of information" as a step in military intelligence operations is the determination of the probable worth, the degree of authenticity, of information. A commander and his staff must realize that in campaign all information received cannot be accepted at face value. Much of it will be inaccurate and some of it completely erroneous. Only after it has been subjected to a critical analysis can its real worth be determined. This analysis consists of a consideration of the reliability of the source, whether the information could reasonably have been obtained, whether it is corroborated by other information bearing on the same point, and in case it is at variance with other information, a consideration of which information is the more likely to be correct. The reader can hardly have failed to note Grouchy's faults in this respect.

The statements of civilians concerning military matters must always be considered as doubtful unless corroborated. On two occasions Grouchy appears to have accepted them at face value, both with dire results.

The reader will recall that at 7:00 PM, 17 June, on arrival at Gembloux, Grouchy received information gathered from the natives of that place that the Prussian corps which had rested there during the morning had marched through Sauvenière in two columns, one taking the road to Sart-à-Walhain, the other, longer column taking the road to Perwez. By accepting this statement at face value Grouchy put himself well on the road to two false conclusions: first, that "some of the Prussian corps were retiring on Liége"; and second, at a much later hour, that the mass of the Prussian forces had camped the night of the 17-18 June near Chyse. The reader now knows, of course, that there were two Prussian corps in this region, the III Corps at Gembloux and the IV Corps at Baudeset, that both of these corps moved northwest rather than northeast, and that only the wounded and the army supply trains moved in the direction of Perwez.

The second occasion of faulty evaluation was at Sart-à-Walhain. At 11:00 AM, 18 June, Grouchy made a report to Napoleon in which he accepted at face value the information given him by a civilian to the effect that the bulk of the enemy was camped near Chyse. This information was uncorroborated by any other source and was even contrary to the weight of other evidence which he had reason to believe

correct, viz., that the bulk of the Prussians had retired in the direction of Wavre. Despite all evidence to the contrary, which continued to accumulate in ever-increasing weight during the day of the 18th, it was not until 7:00 PM, when he received word from Soult, Napoleon's chief of staff, that the Prussian IV Corps at 1:00 PM was advancing against Napoleon's right flank at Mons St. Jean, would he be convinced of the true situation: the Prussians had concentrated on the evening of the 17th in the region of Wavre and on the morning of the 18th, had turned west to support Wellington at Waterloo, a line of action which had been clearly foreseen as a possibility by Grouchy, and incidentally, under Grouchy's mission, the most dangerous line of action the enemy could adopt.

"Interpretation of information" is the determination of its meaning in the enemy situation as a whole. The reader will have noted some faulty work in this connection, too, some of it on the part of Napoleon.

We have seen that at 11:00 AM, 17 June, Napoleon concluded that the enemy situation on the Ligny front was classified: the defeated Prussians were pouring back to the southeast on Namur and to the northeast on Gembloux; they had deserted Wellington and were out of the picture. At this time he had not sufficient factual evidence to warrant any such conclusion. True, at 7:00 AM, the I Cavalry Corps had reported that the Prussians had withdrawn during the night and were in full retreat on Namur and Liége. Apparently nothing was said as to numbers and composition. At about 8:30 AM, this same unit reported that it had charged the tail of the enemy column at Mazy on the Namur road and had captured eight pieces of artillery and a large number of ration and baggage wagons. Still later, some time between 10:00 and 11:00 AM, the II Cavalry Corps had reported as of 8:00 AM, that it was pursuing a Prussian Corps in the direction of Gembloux. But these forces did not add up to Blücher's army of four corps. Moreover, a few pieces of artillery and a column of ration and baggage wagons did not add up to a corps. It is now known, of course, that the forces on the Namur road were only refugees. No reports had been received covering movements on the roads to the west of Gembloux. The only conclusion justified at this time was that the direction taken by the mass of the Prussian army was undetermined.

Nor was Grouchy without errors in this respect. By 3:30 PM, 17 June, he had reliable information that the movement toward Namur had changed direction to the northeast, that Namur was being evacuated to the north, and that an important force was still bivouacked in the vicinity of Gembloux. This was important information tending to refute the hypothesis that the Prussians were retreating down the Meuse on Liége. Rather, it would indicate a retirement to the north or northwest. Yet Grouchy reacted to it not one whit; no reconnaissance to the northwest; no report to Napoleon.

Again, at 10:00 PM, 17 June, in his report to Napoleon, Grouchy inferred that because one enemy column was reported to have taken the road which leads from Sauvenière to Perwez, it was retiring on Liége. The inference was not justified. Not until the column had passed the Louvain highway could he be sure that it would not turn off to the northwest, that it was not merely taking a circuitous route in order to take full advantage of the road net.

Still another instance of faulty interpretation of information occurred when, at 3:00 AM, 18 June, Grouchy, from Gembloux, reported to Napoleon that the Prussian I Corps appeared to be moving on Corbais and the II Corps on Hottomont. His information would lead to no such conclusion. On the contrary, the information he had at this time was to the effect that the Prussian movement through the region of Sart-à-Walhain comprised the II and III Corps for a certainty and probably the I Corps, that everything was moving on Wavre, and that only the wounded were being sent off via the old Roman road—that is, via Hottomont—toward Liége. In addition to that, he should have known that the IV Corps was included in this movement on Wavre. He had requisitions signed by its Quartermaster and, moreover, he knew that this was the corps which had come up from the region of Liége. Yet he made no mention of it. His report was entirely erroneous and entirely misleading and not in accord with the information he had.

Finally, we find Grouchy in this same report of 3:00 AM, informing Napoleon that all his (Grouchy's) information confirmed the belief that the Prussians were retiring on Brussels. Actually, his information warranted no such conclusion; rather it indicated a withdrawal on Wavre, from which place the enemy *could* move on to the northwest on Brussels; he could *also* turn west on Waterloo, or north on Louvain. The point is that Grouchy was trying to outguess the enemy, to ascribe to him intentions concerning which he had as yet given no clear indications. The reader will recall that it was not until near midnight, 17-18 June, that the Prussians, themselves, knew what they were going to do. Not until the enemy moved from Wavre, thus translating his intentions into indications, could Grouchy have been reasonably certain as to what direction the Prussians would take. We have already noted his failure to act to get this information.

Passing on to the matter of "dissemination of information," we might point out two notable failures. The first one is that of Grouchy. By 3:30 PM, 17 June, Grouchy had sufficient information to warrant a conclusion that Namur was being evacuated to the north and that, hence, the withdrawal was not oriented in that direction. On the contrary, it followed from this that the withdrawal was to the north or northwest rather than to the east or northeast on Liége or Maestricht, for if it were the plan to retire on Liége or Maestricht, the enemy would be expected to evacuate Namur, his base, via the main highway which followed right down the Meuse river. Grouchy did not report this important information until 3:00 AM the following morning, nearly twelve hours after he had it.

The second case is that of Prince Jerome who, coming into possession of extremely important information, viz., that the project of a junction of the two Allies in the region of Waterloo had been under discussion by Wellington and his staff, withheld any report of the matter for almost twelve hours so that it arrived too late to be of any real value.

From the above, it can be stated definitely that:

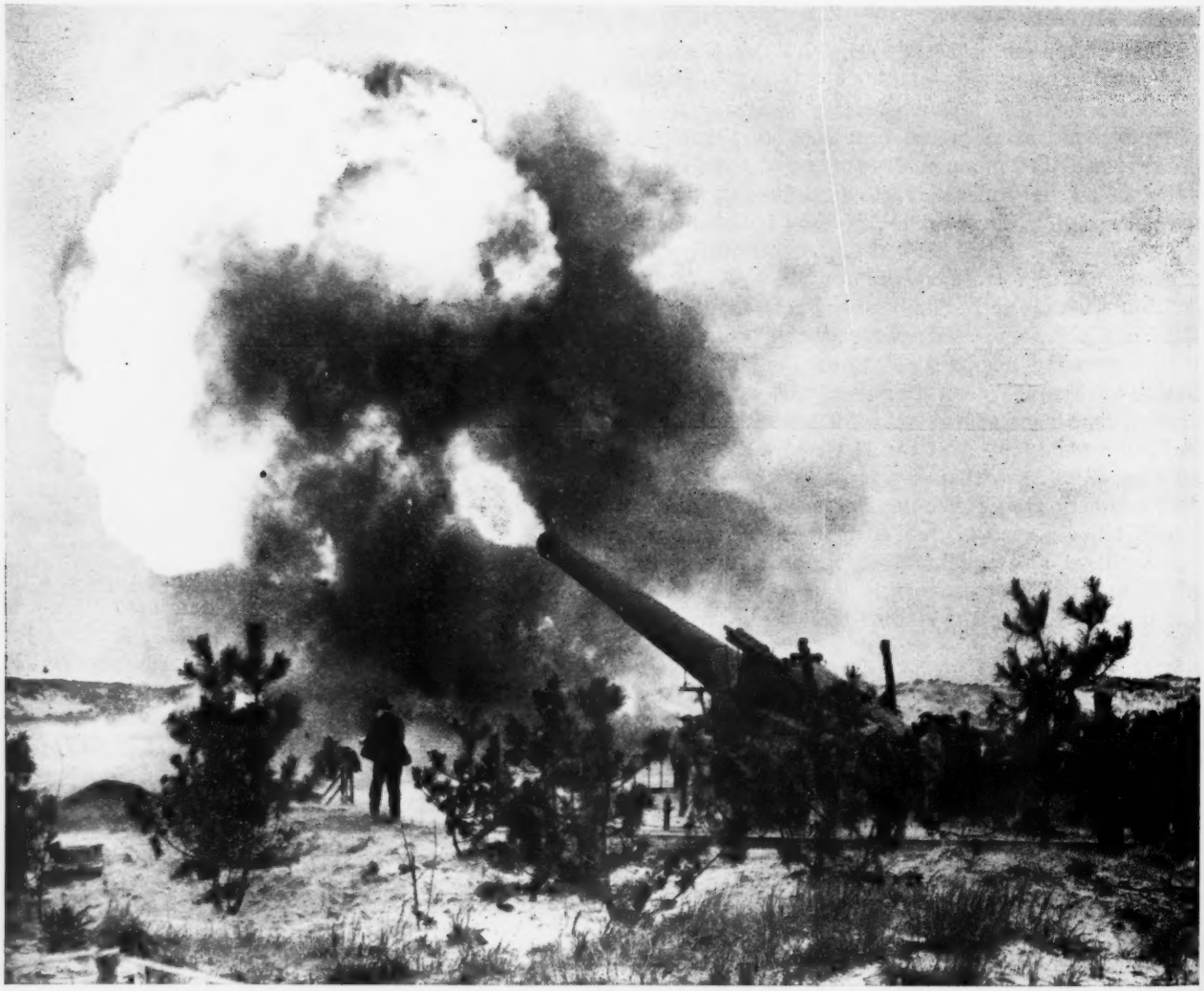
Had information been collected properly, Grouchy would have known the direction and progress taken by

all major operations of the Prussian army. Knowing this, he would have been in a position to maneuver his forces to prevent a junction with the Anglo-Dutch.

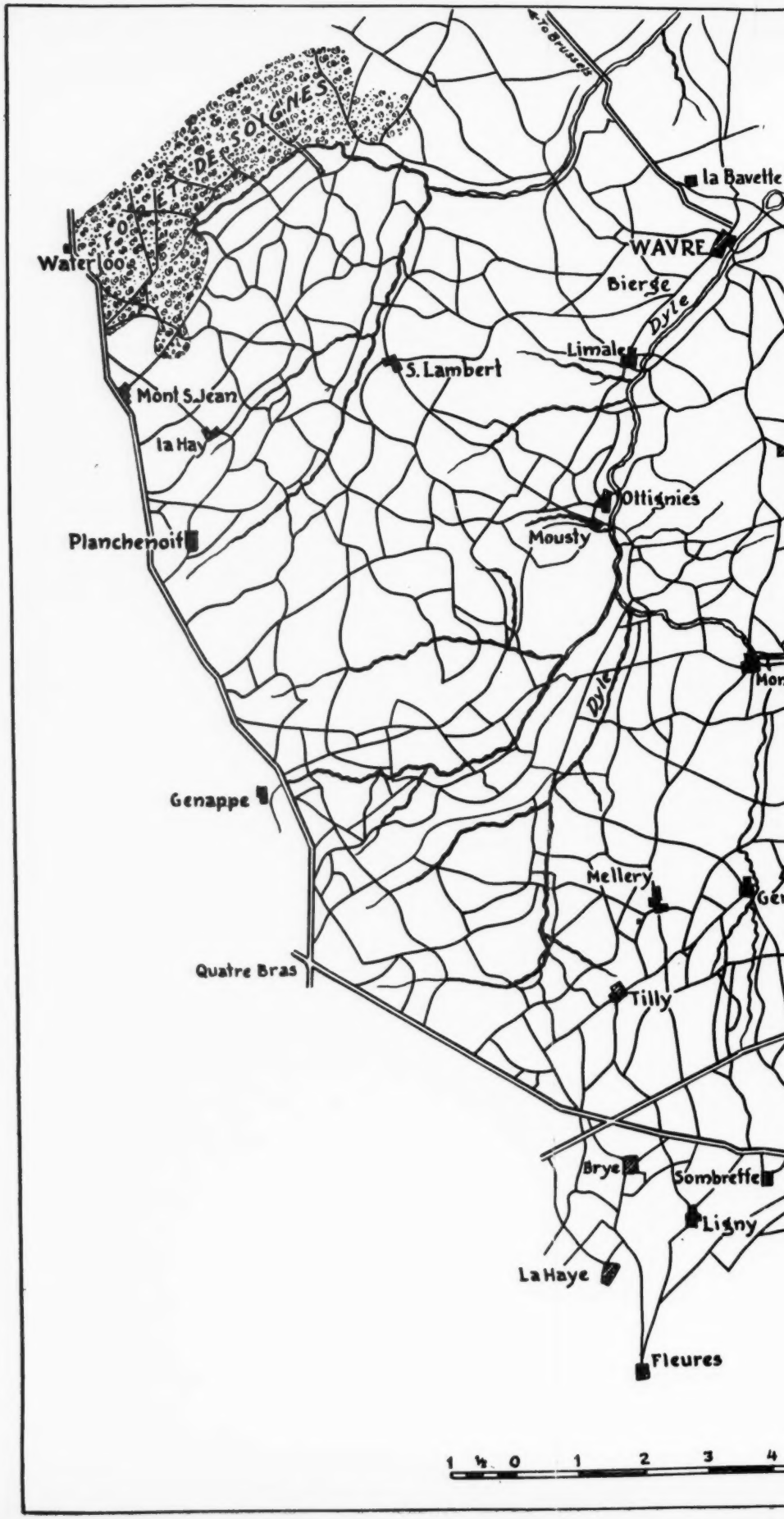
Had information been evaluated properly, Grouchy would not have been deceived into the belief that the bulk of the Prussians were concentrated near Chyse, incapable of intervening at Waterloo.

Had information been interpreted properly, Grouchy would have realized that the enemy at any time was capable of moving to a junction with Wellington, and realizing this he would have been in position to reconnoiter to learn th facts and maneuver to block it.

Finally, had information been disseminated properly Napoleon would not have been surprised at Waterloo. O the contrary, he would have been in a position to direc Grouchy's maneuver intelligently or even to have refuse battle, should that have been necessary.



A 16-INCHER SPEAKS *Wide World Photo*


To Brussels
FORET DE SOIGNES
Waterloo
la Bavette
WAVRE
Bierge
Dyle
Limale
S. Lambert
Mont S. Jean
la Haye
Ottignies
Planchenoit
Mousty
Dyle
Genappe
Mellery
Quatre Bras
Tilly
Brye
Sombreffe
Ligny
La Haye
Fleures
1 ½ 0 1 2 3 4

SKETCH NO.3
Chyse
To Louvain
la Bavette
Jodoigne
To Hannut
LOUVAIN HIGHWAY
Longeville
Dion-le-Mont
Chaumont
la Baraque
Corroy
Corbais
Tourinnes
Hottomont
To Liege
Mont-S-Guibert
Sart-a-Walhain
Perwez
Baudeset
Orneau
Grand Leez
Gery
Gentinnes
ROMAN ROAD
Sauvemére
OLD
Gembloux
Leuze
S. Denis
Tongrinne
Mazy
Ligny
To Liege
NAMUR
3 4 5 6 7 8 9 10 MILES

MILITARY NEWS around the WORLD

CALENDAR OF THE WAR

1939

1 Sept.—Germany invades Poland. Danzig is added to the German Reich.

3 Sept.—Great Britain and France declare war on Germany.

17 Sept.—Russia invades Poland.

27 Sept.—Warsaw surrenders.

28 Sept.—Modlin capitulates to German troops. Polish War ends.

5 Oct.—Soviet-Latvian Pact signed in Moscow.

10 Oct.—Lithuania and Estonia yield naval and air bases to Russia.

19 Oct.—Turkey signs military alliance with Great Britain and France.

14 Nov.—20,000 Soviet troops occupy Lithuania.

18 Nov.—Allied merchant marine placed under British command.

30 Nov.—Russia invades Finland.

17 Dec.—*Graf Spee* is scuttled by her crew off Montevideo, Uruguay.

1940

12 Feb.—Russia and Germany sign trade treaty.

1 Mar.—Rumania increases her Army to 1,600,000.

13 Mar.—Russia and Finland sign peace treaty in Moscow.

9 Apr.—Germany occupies Denmark and invades Norway.

3 May—Allies abandon all of Norway, except Narvik.

10 May—Germany invades the Netherlands, Belgium and Luxemburg. Chamberlain resigns. Churchill appointed Prime Minister.

14 May—The Netherlands capitulates. German troops capture Sedan.

17 May—Germans drive salient into France as far as Rethel. German Army enters Brussels.

18 May—German troops enter Antwerp. Zeeland resistance ends. Marshal Petain appointed Vice-Premier.

19 May—General Weygand succeeds General Gamelin as Generalissimo of Allied Forces. Germans drive wedge to Landrecies. Germany annexes Eupen, Malmedy and Moresnet (Belgium).

20 May—Germans take St. Quentin.

21 May—Germans penetrate to Abbeville and capture Amiens and Arras. General Giraud, comanding 9th Army, and staff captured.

22 May—Rumania increases Army to 2,000,000.

23 May—Germans retake Abbeville and drive thrust toward Boulogne.

24 May—Germans occupy St. Omer.

26 May—General Weygand dismisses fifteen generals held responsible for French rout from Meuse Front.

27 May—Germans take Boulogne and Calais. Lt. General Sir John Greer Dill, 58, named Commander of the British Imperial General Staff, replacing General Sir Edmund Ironside, 60, who is given command of the Home Front.

28 May—King Leopold orders the Belgian Army to surrender.

29 May—London reports capture of Narvik, Norway, by Allied Force. Germans take Ostend and Lille.

30 May—British and French conduct retreat from Flanders on large scale.

31 May—Allies retake Abbeville.

2 June—German planes bomb southern France in vicinity of Lyon and Marseilles. Germans bomb Paris from the air.

4 June—Germans take Dunkerque and 40,000 prisoners. Battle of Flanders and Artois ends.

9 June—British and French abandon Narvik. Norway surrenders to Germany.

10 June—Italy declares war against France and England.

11 June—French Government moves to Tours. Germans cross the lower Seine.

14 June—Germans enter Paris, LeHavre and Montmedy. Spain occupies the international zone of Tangier.

15 June—Germans capture Verdun. French capital moves to Bordeaux. Russia occupies Lithuania.

16 June—Reynaud cabinet resigns. Marshal Petain named Premier of France. French troops abandon the Maginot Line.

17 June—France asks peace terms. Russia invades Latvia and Estonia.

18 June—Hitler and Mussolini meet at Munich to negotiate French peace terms.

21 June—Peace terms handed to French envoys at Compiegne by Hitler.

22 June—France signs armistice with Germany.

24 June—France signs armistice with Italy.

25 June—War in France ends 1:35 AM, Western European Time.

26 June—Russia serves ultimatum on Rumania demanding Bessarabia and Northern Bucovina.

27 June—German troops reach the Spanish border.

28 June—Rumania cedes Bessarabia and Northern Bucovina to Russia and moves troops to prevent Hungarian action against Transylvania. Russia initiates occupation of the ceded provinces.

Hungary and Bulgaria call out reserves. Turkey rushes fleet to defend the Dardanelles.

30 June—Russia seizes Reni (Rumania) at the juncture of the Danube and Prut Rivers.

1 July—Germany occupies the British Islands of Guernsey and Jersey.

4 July—Rumania orders British oil men to leave and forms new pro-German cabinet. Britain starts operations in the Mediterranean resulting in destruction and capture of the French Fleet.

5 July—The Petain Government severs relations with Britain.

7 July—Russia pours additional armored divisions into Bessarabia and Northern Bucovina.

10 July—German planes stage large bombing raid over Wales. British and Italian fleets clash in the Mediterranean.

11 July—The Irish Republic rejects joint defense with Northern Ireland. Hungary drops campaign for immediate return of Transylvania from Rumania and announces adherence to Axis Powers.

12 July—Marshal Petain assumes functions as chief of authoritarian state.

18 July—German troops land on the French island of Ouessant off the coast of Brittany, 120 miles south of Land's End.

21 July—Latvia, Lithuania and Estonia vote for admission to the Soviet Union.

22 July—British rejects German peace offer.

23 July—To fix responsibility for France's defeat the Vichy Government orders trial of former French officials.

25 July—President Roosevelt bans all exports of American oil and scrap metal, except under special license.

27 July—The conference at Havana reaches complete agreement on questions of colonies, trade and Fifth Column activities.

28 July—Germany claims that British shipping losses have reached a rate twice that of the worst period of the War of 1914-1918.

30 July—The British naval blockade is extended to cover all imports and exports to and from the European continent.

31 July—Secretary of War Stimson urges registration of all men between the ages of 18 and 54 years.

2 August—A French military court condemns General Charles de Gaulle to death "in absentia."

3 August—Lord Beaverbrook, British Minister of Aircraft Production is brought into the War Cabinet.

6 August—Italy begins an invasion of British Somaliland and Kenya Colony. In Somaliland the Italian drive is successful.

9 August—The British Government announces withdrawal of all British forces from Shanghai, leaving the international settlement virtually under Japanese rule.

15 August—The bill empowering the President to call out the National Guard for duty in the Western Hemisphere or American possessions passes the House of Representatives.

20-21 August—British forces having withdrawn from Somaliland, Italians occupy the capital, Berbera.

22-23 August—London has its first night raid of the war.

30-31 August—Rumania, under Axis coercion, cedes to Hungary half the province of Transylvania, lost after the War of 1914-1918, in return for an Axis guarantee of her borders with Hungary, Bulgaria and Russia.

2 September—Ultimatum from Japan to French Indo-China.

3 September—President Roosevelt announces to Congress that he is giving Great Britain 50 over-age destroyers in exchange for strategic naval and air bases in the Atlantic.

4-6 September—King Carol of Rumania calls General Ion Antonescu to rule as dictator, and then adbicates the throne in favor of his son Michael.

The United States warns Japan against aggressive moves toward French Indo-China or the Netherlands East Indies.

7 September—In an eight-hour onslaught, "the most concentrated air attack in history," German planes rain tons of bombs on London.

The Vichy Government orders "preventive arrest" of General Gamelin and former premiers Daladier and Reynaud.

In Washington the Burke-Wadsworth Selective Service Bill passes the House of Representatives.

12 September—Italy launches her drive into Egypt.

14 September—The R.A.F. smashes at German invasion barge concentrations along the French, Dutch, and Belgian coasts.

15-16 September—The Burke-Wadsworth Bill is signed by the President and becomes law, calling for the registration for compulsory military service of all males from 21 to 35 years of age.

22 September—In spite of French concessions, Japanese troops move into French Indo-China; clash with French troops at Dong Dang.

24 September—British attempts to land at Dakar, West Africa, a British-French expeditionary force under General de Gaulle meet with stubborn resistance.

25 September—The British-French expeditionary force abandons its three day siege of Dakar and withdraws.

26 September—President Roosevelt places an embargo on the export of all scrap iron and steel except to the Western Hemisphere and Great Britain.

27 September—A tripartite military treaty, to establish a "new order" in Europe and East Asia, is signed in Berlin by representatives of Germany, Italy, and Japan.

1 October—The British Admiralty reports shipping losses of 131,857 tons for the week ending September 22nd, establishing an all-time high.

2 October—In Washington Secretary of the Navy Knox announces formation af a U.S. Atlantic Patrol Force consisting of 125 vessels.

3 October—Secretary of War Stimson announces a U.S. parachute corps.

4 October—Japanese Premier Konoye warns that any U.S. challenge to Japan, Italy, or Germany will bring war.

6-7 October—50,000 German troops pour into Rumania to police oil fields and Black Sea ports.

8-9 October—Americans are advised by the U.S. State Department to leave China, the Japanese Empire, Manchukuo, Hong Kong, and French Indo-China.

10-11 October—Turkey warns Germany against a drive on Egypt through the Near East.

12 October—Russia masses an army on the Russian-Rumanian frontier.

13 October—Buenos Aires reports that Brazil and Chile have agreed to lease air and naval bases to the United States.

16 October—Registration day under the first U.S. peacetime draft.

19 October—Tension in the Balkans grows as Russia, Turkey, and Germany move troops into the frontier zones.

French "war-guilt" court at Riom prefers charges against Blum, Reynaud, and Mandel.

25-26 October—President Roosevelt warns the Vichy Government that military collaboration with the Axis might lead to U.S. occupation of the Martinique and French Guiana under the terms of the Havana Conference.

27 October—Italian troops cross the Greek-Albanian border and begin the invasion of Greece. The Greek government appeals to Great Britain for aid.

28 October—Full British aid is promised to Greece. Greek forces put up tenacious resistance to invaders.

29 October—In Washington, Secretary of War Stimson, blindfolded, draws out first draft number, 158.

BRAZIL

Mineral Wealth Abounds:

One of the world's richest countries in mineral wealth, Brazil possesses tremendous reserves of the two raw materials required for the making of steel—iron and manganese ore. Iron ore reserves available for commercial development amount to about 7,000,000,000 tons, their iron content running from 66 percent to 72 percent. The manganese deposits are estimated at 250,000,000 tons, the pure metal content ranging from 40 to 55 percent.

The manufacture of steel and iron in Brazil has been impeded, however, by the lack of adequate facilities for transportation between the mines, which are in the interior of the country, and the seaboard. Plans are now afoot to improve the existing transportation system and encourage a large scale industrial production of heavy steel.

(*Pan-American News*)

CENTRAL AMERICA

"Continuismo" Coined:

The synthetic term "continuismo" has ben applied to the convenient practice, common in certain parts of Central and South America, whereby an incumbent maintains himself indefinitely in office through the expedient of tampering with the legal or constitutional machinery. "Continuismo" has been resorted to in four of the Central American countries: In Guatemala, where Ubico is to continue until 1943; in El Salvador, where Martinez remains in office till 1945; in Nicaragua where Somoza's term has been extended to 1947; and in Honduras, where President Carias is to serve until January 1st, 1949.

(*The Hemisphere*)

CHILE

Drydock for U.S. Battleships:

The Ministry of Defense is reported to have given final approval to plans of a privately owned Chilean-United States company to build a huge drydock capable of accommodating the new heavy battleships which are to be added to the United States fleet. The drydock will be situated at Caleta Membrillo, a fishing harbor on the southern rim of Valparaiso Bay. It will cost $5,000,000, and will require four years to build.

(*Foreign Press*)

EGYPT

Italian Invasion Lags:

Since mid-September, the Italian push into Egypt has been stalled somewhere along the coast, a few miles beyond Sidi Barrani. This may mean only that the Italian commander, Marshal Rudolfo Graziani, is taking his time about bringing up troops and supplies for another push toward Alexandria. Such a push could start whenever a major portion of Italy's Libyan Army—estimated at 250,000 to 300,000 Italians and natives—can be safely thrown against the 80,000 to 100,000 British defenders.

(*Current History*)

EIRE

Fleet Bases Denied to Britain:

Britain finds resistance to the German onslaught more difficult than in the World War because it is denied access to several important bases in Eire, where previously British warships could secure fuel and supplies while on convoy service. Three Irish ports—Cobh (Queenstown), Berehaven, and Lough Swilly—are near the main routes to North America and considerably west of any British base. All three ports were relinquished by the English government in April, 1938, when Premier de Valera and Malcolm McDonald, then Dominions Secretary, negotiated a set of agreements covering most of the outstanding economic issues between Eire and Britain. Prior to that time, Great Britain—in accordance with the treaty of 1921 establishing the Irish Free State—had controlled and garrisoned these bases. Prime Minister Churchill, who had strenuously opposed the 1938 transfer, precipitated a debate over Eire's neutrality by describing the situation in his November 5th address as "a most heavy and grievous burden and one which should never have been placed upon our shoulders."

Premier de Valera answered on November 7th by reaffirming Eire's complete neutrality in an address before the Dail. Declaring that there could be no question of opening these ports to Britain, Mr. de Valera warned that "any attempt to bring pressure to bear, no matter from which side it might come, would lead only to bloodshed."

(*Foreign Policy Bulletin*)

FINLAND

An agreement to demilitarize the Aaland Islands (at the entrance to the Gulf of Bothnia) was reached in Moscow on October 11. It was signed by V. Molotov and Mr. Paasikivi, Finland's ambassador to Russia.

(*Foreign Press*)

FRANCE

Age Limits Set for Officers of Army, Navy and Air Force:

As a result of recent legislation, officers of the regular army wil be placed on the retired list at the following ages:

Army Commanders	62 years.
Corps or Division Commanders	60 years.
Brigadier Generals	58 years.
Colonels	56 years.
Lieutenant-Colonels	54 years.
Majors	52 years.
Junior Officers	45 years.

The above limits are reduced by one year in the case of any officer who, having entered the army before 1918, did not serve with troops during the war of 1914-1918 nor the war of 1939-1940.

In the case of naval officers, the following limits will apply:

Admiral	62 years.
Vice-Admiral	59-60 years. (depending on command)
Rear-Admiral	57 years.
Captain	55 years.
Commander	50-52 years. (depending on command)
Lieutenants and Ensigns	45 years

For officers of the air force, the retirement age is fixed at:

General of Air Army	55 years.
General of Air Corps	54 years.
General of Air Division	53 years.
General of Air Brigade	52 years.
Colonel	51 years.
Lieutenant-Colonel	48 years.
Major	47 years.
Captains and Lieutenants	45 years.

The above figures apply only to those officers on duty with flying units. In the case of officers commanding service units of the air force, the limits are increased by amounts varying from two to four years.

(*La France Militaire*, August 7, 1940)

GERMANY

Occupied Countries a Problem:

Germany is reported not to be having an easy time with the captive populations. The Dutch are a constant source of trouble; the Belgian workers are known to be engaging in sporadic acts of sabotage; and the Norwegians are by no means passively accepting the regime of Major Quisling. None of this opposition to the Germans presents an insurmountable obstacle; but it does mean that it is necessary to keep troops in all these occupied countries; and it also means that, economically and industrially speaking, these countries are not producing at the rate expected by the Germans. In the words of Demaree Bess, Christian Science Monitor correspondent in Europe: "It is hardly an exaggeration to say that Germany now (is) engaged in a dozen separate wars. In each of the separate occupied countries—especially in France—the Germans were confronted with complicated domestic (situations) which had become, in fact, camouflaged civil wars."

(*Foreign Observer*)

Parachute Training:

The German training system differs from that of other nations. The Germans argue that the conditions of a descent from a tower are so different from a "free descent" that a pupil has to be trained all over again when he has to jump from a flying plane. Thus they believe that everything a Service parachutist has to observe during a descent can be taught more efficiently on the ground.

Parachutists are usually voluteers, aged between 17 and 23, who must pass a rigid mental test as well as a strict physical examination. If accepted, the candidates are sent to a recruiting school where they undergo the regular military drill for four months, following which they are transferred to a parachute school.

The parachute training course is split into four main groups: (1) jumping, (2) falling through the air, (3) landing, (4) parachute construction, handling and maintenance.

The most important part of the training is the landing. How to fall without suffering injuries is taught, first kneeling, later standing. This part of the training is concluded with systematic "dragging exercises" whereby the pupils are dragged over the drill ground by means of a slow moving car.

(*The Aeroplane*)

Authorized Translation of Three-Power Pact:

Signatories of the Three-Power Pact authorized, in Berlin, the following English translation of the protocol:

THREE-POWER PACT BETWEEN GERMANY, ITALY AND JAPAN

The governments of Germany, Italy and Japan, considering it as a condition precedent of any lasting peace that all nations of the world be given each its own proper place, have decided to stand by and cooperate with one another in regard to their efforts in greater East Asia and regions of Europe, respectively, wherein it is their prime purpose to establish and maintain a new order of things calculated to promote the mutual prosperity and welfare of the peoples concerned.

Futhermore, it is the desire of the three governments to extend cooperation to such nations in other spheres of the world as may be inclined to put forth endeavors along lines similar to their own, in order that their ultimate aspirations for world peace may thus be realized.

Accordingly, the governments of Germany, Italy and Japan have agreed as follows:

ARTICLE ONE.—Japan recognizes and respects the leadership of Germany and Italy in establishment of a new order in Europe.

ARTICLE TWO.—Germany and Italy recognize and respect the leadership of Japan in the establishment of a new order in Greater East Asia.

ARTICLE THREE.—Germany, Italy and Japan agree to cooperate in their efforts on aforesaid lines. They further undertake to assist one another with all political, economic and military means when one of the three contracting powers is attacked by a power at present not involved in the European war or in the Chinese-Japanese conflict.

ARTICLE FOUR.—With the view to implementing the present pact, joint technical commissions, members which are to be appointed by the respective governments of Germany, Italy and Japan, will meet without delay.

ARTICLE FIVE.—Germany, Italy and Japan affirm that the aforesaid terms do not in any way affect the political status which exists at present as between each of three contracting parties and Soviet Russia.

ARTICLE SIX.—The present pact shall come into effect immediately upon signature and shall remain in force ten years from the date of its coming into force. At the proper time before expiration of said term, the high contracting parties shall at the request of any of them enter into negotiations for its renewal.

In faith whereof, the undersigned duly authorized by their respective governments have signed this pact and have affixed their signatures.

Done in triplicate at Berlin, the 27th day of September 1940 in the 18th year of the Fascist era, corresponding to the 27th day of the ninth month of the 15th year of Showa (the Reign of Emperor Hirohito).

(*Foreign Press*)

GREAT BRITAIN

Home Guard Grows:

Great Britain's Home Guard, organized to combat parachutists and invaders by air, now numbers 1,700,000 men. A training school for Home Guards has been opened by the War Office. It is expected that this Guard will be fully equipped within a few months.

(*Foreign Press*)

Air Units Grouped Tactically:

The R.A.F. operates a total of approximately 6,000 first-line combat planes and is divided for operating purposes into two commands. The Fighter Command, made up largely of Spitfires and Hurricane Pursuit ships, is also in command of all antiaircraft artillery, balloon barrages, and searchlight units. Its role is primarily defensive in character. The Bomber Command, composed of Blenheim, Wellington, Hampden, and Lockheed-Hudson bombers, is the offensive striking arm of the R.A.F. There is also a Fleet Air Arm, as well as an air force attached to the Coastal Command.

(*Foreign Press*)

New Dive-Bomber in Use:

A new two-seat dive-bomber is in service with the Fleet Air Arm. This machine, the Fulmar, has a higher performance than that of any naval aeroplane previously used. It is powered with a Rolls-Royce Merlin liquid-cooled motor, and is the first Merlin powered plane the F.A.A. has had. It is likewise rated as the fastest bomber yet to be adopted by the Fleet Air Arm, predictions characterizing it as more than a match for any German fighter.

(*The Aeroplane*)

Fighter Markings Abandoned:

The familiar black and white markings on the under surfaces of the wings of British fighters have been replaced by the painting of the whole of the under surfaces in a light blue. The change in the coloration seems to indicate an alteration of policy in this regard. The previous scheme of markings was to have the port wing of fighters painted black underneath and the starboard wing white, a combination which was intended to show up clearly against any background. The new coloring is presumably intended to tone with the sky; but, except when the plane is flying at great altitudes, the purpose does not seem to have been achieved.

(*The Aeroplane*)

ITALY

Supply May Become Problem:

A food shortage in Italy is apparently not imminent, though the greatest care is being exercised in the use of supplies. Only one type of bread flour and of laundry soap is being sold; and a recent government regulation limited the production of spaghetti to one kind. On the other hand, there are reports that the supply of raw materials essential for war industries is quite low, and especially of coal, petroleum, and copper, though coal shipments from Germany seem to have been increased. Since ocean-going commerce has been stifled by the British blockade, trade with Germany, Slovakia, Switzerland and Yugoslavia is being pushed substantially.

(*Events*)

JAPAN

Living Costs Soar:

According to investigations conducted by ASAHI, the cost of living index in Japan for July, 1940, was 253.7 (July, 1914, being taken as 100). Compared with pre-Chinese War times, the price index shows an average advance of 31.9 percent, the most conspicuous item being a rise of 64.6 percent in the price of clothing. Indices for the various items as compared with July, 1937, are given below:

EXPENSE	July, 1937	July, 1940	Advance
Food and Drink	181	261	43.8%
Housing	233	237	1.5%
Heating and Lighting	194	273	40.7%
Clothing	168	276	64.6%
Culture	186	210	13.0%
Average	192	254	31.9%

(*The Japan Weekly Chronicle*)

Army Reforms Effected:

With a view to bringing the Army organization more closely into accord with the requirements of modern warfare, Japanese military authorities have decided to abolish the classification of regular troops into various arms. The army had hitherto been divided into six branches: infantry, cavalry, artillery, engineers (sappers), transport, and air. This system of classification is now abolished.

To the army's four military departments: intendance, medical, veterinary, and music, has been added a technical department. The new department is divided into two sections: military and air.

Another change in Japanese army organization is the creation of a new grade, *Heicho*, between *Jotohei* (superior privates) and corporals.

(*The Japan Weekly Chronicle*)

NORWAY

Governmental Status Altered:

The end of monarchy and Parliament in Norway was announced September 25th, 1940, by Joseph Terboven, Nazi high commissioner for the conquered country. The exiled King Haakon was removed as chief of state; the succession was broken; and the King's family deprived of the powers and privileges of royalty.

It was stated that henceforth Norway would be neither a monarchy nor a German protectorate. Thus, no precise definition of the nature of the new government was given. Provision was made for the indefinite occupation of the country by German troops, the sanction of Norwegian law being thus bestowed upon such occupation.

(*Foreign Press*)

RUMANIA

Axis Still Needs Oil:

With the consumption of petroleum in Germany and occupied territories estimated at 7 million tons and Italian consumption at 2 million, the Axis powers have been hard pressed to find adequate sources of supply. Seizure of the Rumanian oil fields will cover only part of the requirements, since these fields produce about 6 million tons annually. The problem of transportation, moreover, remains unsolved. Oil men predict that not more than 2 million tons can be transported from Rumania to the Axis states overland and up the Danube, for railways connecting Rumania with the Reich, as well as Danubian barges, are already operating close to capacity. As long as the British fleet controls the Eastern Mediterranean, Rumanian oil cannot follow its peacetime route by tanker from Constanza on the Black Sea through the Straits and out into the Mediterranean.

(*Foreign Policy Bulletin*)

RUSSIA

Political Commissars Out—

On August 12th the Soviet government announced the definite end of the system of political commissars in the Red Army, a change which had been foreshadowed since the Finnish War. The political commissars, whose primary task had been to instill Communistic doctrines into the armed forces, had held equal ranks with the military commanders and had countersigned their orders. The dual authority that such a system created was inimical to the necessary unity of command in war. Under the new system, assistant commanders will supervise the political education of the armed forces, but under the direct orders of the military chiefs.

(*Events*)

Prospects for Soviet-Japanese Agreement—

While M. Molotov was visiting Berlin—the first time that a Soviet premier had gone abroad—his government engaged in negotiations for a non-aggression pact with Japan, whose new Ambassador to Moscow, Lieutenant General Tatekawa, was received by the Kremlin with unusual honors. It may be expected that Moscow will come to some kind of agreement with Tokyo; but it is not yet clear whether this agreement will be confined to Soviet-Japanese economic issues, or will be a broader settlement concerning recognition of spheres of influence in Asia and cessation of Soviet aid to China.

(*Foreign Policy Bulletin*)

SPAIN

Hesitation To Join "New Order"—

Spain has backed away from adherence to any "new order," however alluring (since she would almost certainly acquire Gibraltar in the deal), because of fears of Britain. Spain has a long, exposed coastline, and the R.A.F. flyers could bomb Spanish cities with great ease. Reports are that the Falangist government in Madrid, whatever its preferences, is by no means convinced that Britain will lose the war, and that for the present it will make every effort to remain neutral. But in the next few weeks the effort to maintain that neutrality is certain to be subjected to increasing strain.

(*The Foreign Observer*)

Training in March Discipline*

The march discipline and marching ability of the German infantry is likely to be overlooked when studying and drawing conclusions concerning their operations, especially in Poland and on the western front where motor transportation was used extensively.

In their training and other preparation for motorized and mechanized warfare the Germans did not neglect, and they continue to emphasize, the importance of having infantry that is capable of making extended marches under adverse conditions. In spite of the presence of motor vehicles in large quantities, it is realized that infantry units and even units of other combat arms are required at times to move on foot. Hence the German soldier, especially the infantryman, is trained, both physically and psychologically, to endure such marches.

German instructions in troop leadership state: "A great part of the combat activity of troops consists of marching. The success of all ground combat operations is based on the dependable marching ability of the units involved and their ability to function efficiently after the completion of the march."

The following notes and hints on march discipline obtained from reading operation reports, conversations with military personnel, and from observation of German marching units, are submitted as of possible interest.

The normal distance between rifle companies on the march is 10 paces. Between horse-mounted units, similar to an infantry company in size, marching in the same column with foot troops, this distance is increased to 15 paces.

Horse-mounted units, if followed by foot elements, never gain lost distance by trotting. This causes an impossible situation for the following foot troops. If horse-mounted units have lost distance, it is regained during the next halt—not by trotting.

The narrower the road, the more it is necessary for troops to march on the right to allow space for motor traffic, bicycles or horse-mounted messengers. A unit has no march discipline if it is necessary to caution: "To the right of the road."

If a commander gives an arm signal or an oral command to his unit while marching, the command of execution is not given until he is certain that all subordinate elements have received the command. Otherwise the leading elements have changed their pace or formation before the rear elements understand the command.

Individuals should not drink water from a canteen while actually marching. The Germans consider this an indication of an untrained unit. Thirst should be quenched during halts.

Rolls are carried on the back, or in the company baggage wagon and this vehicle marches with the company or in a special train according to the situation. In a column of marching troops observed near Saarbrücken on 11 July 1940, company baggage wagons apparently were assembled by battalions and marched in the battalion train at the rear of each battalion. Other marching columns have been observed in which the company baggage wagon carrying individual rolls marched at the rear of the company. Much leeway is given to battalion and higher commanders in this respect.

According to motion picture newsreels and conversations, the horse-drawn transportation marching with a company or similar unit, maintains its place in the column even if it becomes necessary to detail men to assist by pushing or pulling it through difficult terrain.

When approaching combat, the rolls, of course, are normally carried in the company baggage wagons and the individual rifleman carries his weapon, ammunition as issued, canteen, mess kit, gas mask, two or three hand grenades, and possibly his rain coat.

The German is a lover of music. Commanders utilize this trait to assist in maintaining morale and spirits during marches. Marching songs are frequently heard when passing columns on the road.

Probably the most important factor contributing to the marching endurance of the German soldier is the fact that walking is a tradition with him. In his youth he assisted his parents by carrying an allotted part of the family camping equipment while on hikes into the woods, or along the rivers during holiday vacations. In the Hitler Youth organization, and in the working camps (Arbeitsdienst) he received further training. By the time he arrives in the army, he expects to be required to make long and fatiguing marches in the normal course of events. His ability to endure them is a matter of family tradition and personal pride.

*Observation of marching units, motion picture newsreels, conversations with German military personnel.

PAN AMERICAN UNION
STATISTICAL DIVISION

THE AMERICAS

Country	*Population*	*Area Square Miles*	*Capital*	*Population*
Argentina	13,129,723	1,079,965	Buenos Aires	2,345,221
Bolivia	3,457,000	419,470 ②	La Paz	250,000
Brazil	45,002,176	3,286,170	Rio de Janeiro	1,896,998
Chile	4,677,089	286,396	Santiago	829,830
Colombia	8,701,816	439,828	Bogota	330,312
Costa Rica	639,197	23,000	San Jose	78,883
Cuba	4,227,597	44,164	Habana	568,913
Dominican Republic	1,655,779	19,325	Ciudad Trujillo	71,297
Ecuador	2,921,688	③	Quito	215,921
El Salvador	1,744,535	13,176	San Salvador	102,316
Guatemala	3,284,269	48,290	Guatemala City	166,456
Haiti	3,000,000	10,700	Port-au-Prince	125,000
Honduras	1,038,061	46,332	Tegucigalpa	40,000
Mexico	19,848,322	758,258	Mexico City	1,229,576
Nicaragua	1,133,572	57,143	Managua	70,000
Panama	573,351	34,169	Panama	82,827
Paraguay	1,000,000	169,266	Asuncion	104,819
Peru	6,762,881	③	Lima	450,000
Uruguay	2,122,628	72,153	Montevideo	703,518
Venezuela	3,491,159	352,170	Caracas	203,342
United States	133,886,372 ⑤	3,738,395	Washington, D. C.	663,153

① Listed in order of importance according to value for the latest available year.

② Tentative.

③ Exact area undetermined.

④ Exclusive of reexports.

AT A GLANCE

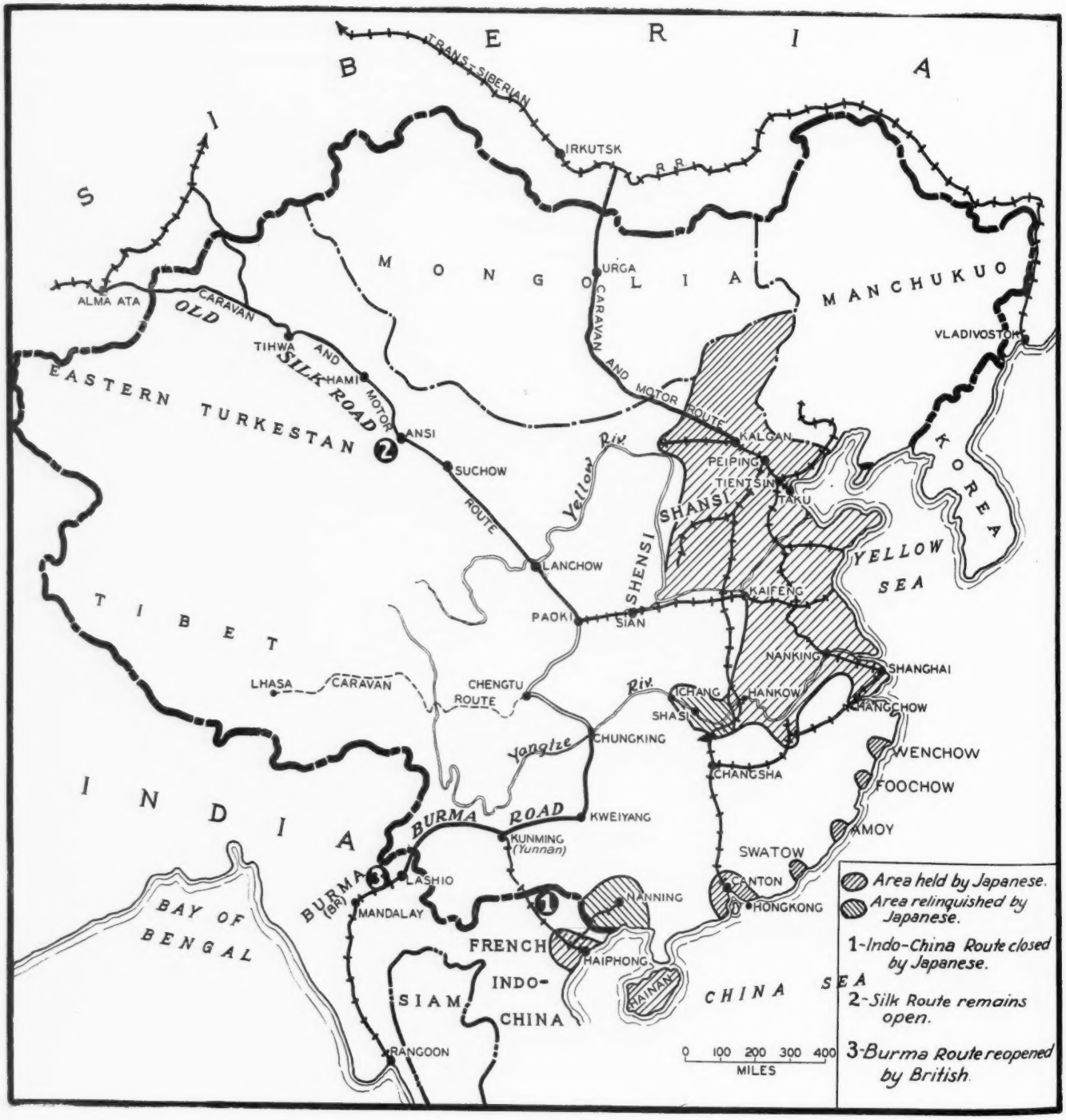
Foreign Trade — 1939
(Approximate values in thousands of United States dollars)

Principal Exports ①	*Imports* ⑥	*Exports*
Wheat, corn, linseed, oats, barley, flour, frozen and chilled meats, hides, skins, wool, residuary animal products, meat extract, butter, cotton, and quebracho extract and wood	309,021	363,246
Tin, silver, wolfram, antimony, lead, copper, zinc, gold, and bismuth	24,237	42,851
Coffee, cotton, hides and skins, cocoa, oranges, carnauba wax, canned meats, lumber, chilled and frozen meats, and tobacco	296,127	333,674
Copper bars, nitrate, gold and silver ores and concentrates, wool, iron ore, lentils, beans, hides, iodine, and fresh fruits	82,160	134,280
Coffee, gold, petroleum, bananas, cattle hides, platinum, and tobacco	104,819	101,169
Coffee, bananas, gold, tuna fish, and mineral concentrates	16,885	9,086
Raw sugar, refined sugar, molasses, leaf tobacco, cigars, bananas, copper and iron ore, manganese, alcoholic beverages, sponges, henequen, and honey	105,862	147,676
Sugar, cocoa, coffee, yuca starch, leaf tobacco, corn, molasses, cattle, and bananas	11,592	18,643
Cocoa, petroleum and derivatives, cyanide precipitates, coffee, gold, rice, bananas, tagua nuts, hats (toquilla straw), rubber, hides and skins, wood (mainly balsa), and kapok	10,173	11,341
Coffee, gold and silver, sugar, balsam, and henequen	8,850	12,750
Coffee, bananas, chicle, gold, honey, and cattle hides	15,296	16,935
Coffee, raw sugar, cotton, sisal, bananas, and cocoa	8,180	7,268
Bananas, silver, gold, coffee, livestock, grapefruit, leaf tobacco, cyanide precipitates, and coconuts	9,703	9,867
Silver, gold, lead, zinc, copper, crude petroleum, coffee, henequen, cattle, bananas, and chicle	121,597	176,569
Gold, coffee, bananas, lumber, cotton, livestock, hides and skins, and sugar	6,365	8,301
Bananas, cocoa, meat, gold, coconuts, cattle hides, rubber, and mother-of-pearl	20,464	3,487 ④
Quebracho extract, canned meats, cattle hides, yerba mate, meat extract, oil of petit grain, lumber, and tobacco	7,731	8,075
Cotton, copper bars, petroleum and derivatives, sugar, wool, gold, and mineral ores and concentrates	48,088	71,707
Linseed, frozen beef, preserved meats, cattle hides, wheat, chilled beef, and sheepskins	32,655	50,632
Petroleum, coffee, gold, cocoa, tonka beans, pearls, sugar, cattle, hides, and alligator and goat skins	101,810	298,871
Machinery, petroleum and products, automobiles and parts, raw cotton, iron and steel-mill products, unmanufactured tobacco, chemicals and products, wheat, and flour	2,276,099	3,123,343

⑤ Exclusive of Philippine Islands and Military and Naval Services abroad.

⑥ Chief imports of the Latin American Republics are mainly mineral oils, iron and steel for construction, leather and manufactures, furniture and office appliances, automobiles, aeroplanes, radios, ready-made clothing, textiles, tools and implements for mining and agriculture, hardware, lumber, engines and motors, electrical apparatus and material.

The Sino-Japanese War



THE SITUATION IN CHINA

The Sino-Japanese War

By Captain M. R. Kammerer, *Infantry*

Military operations in China during recent months have been somewhat obscured by diplomatic maneuvers destined to curtail or to extend outside aid to the Chinese. In July, 1940, the British had conceded to the Japanese demand that the Burma road to Kunming be closed and had agreed to keep that line of communications closed for a period of three months, beginning 18 July. Two months later, the Japanese were able to impose on the helpless Vichy government a treaty permitting Japan to send into Indo-China a force of 6,000 men to garrison three air bases. This meant gaining a foothold which has been considerably expanded since. It also meant the closing of the last southern gateway into China and left the Chinese with but one outlet to foreign assistance—through northwestern China to Russia. When, in late September, Japan signed the three-power pact with Germany and Italy, the Japanese probably had hopes that this step would influence China to give up the struggle, the British to clear out of Asia.

Great Britain refused to be coerced by such a move, however, and quickly decided to reopen the Burma road at the termination of the three-month period. At midnight, 18 October, trucks laden with supplies started to move once more over the 725-mile road from the border to the Chinese capital at Chungking.

The value of this road to the Chinese lies not so much in the amount of supplies it makes available to the Chinese as in the moral effect resulting from the knowledge that foreign powers are still interested in and willing to aid their cause. Actually more than 1,500 miles separate Chungking from the nearest open seaport—Rangoon. The first 550 miles of this trip, Rangoon through Mandalay to Lashio, are by rail. The remainder of the trip must be made by motor, much of it over difficult mountain roads. The Japanese are in a position to render these roads even more difficult by bombing the many bridges and narrow passes from their newly-organized air bases in Indo-China. Although the Chinese road gangs are well organized for prompt repair work, it is extremely doubtful that shipments will be able to move steadily or in any great quantities.

Nevertheless, the reopening of the road seemed to revive the hopes of the Chinese who started their own offensive along the entire 1,500-mile front during the last few days of October. Chinese troops moved into parts of Kwangsi province, including its chief city, Nanning, evacuated by the Japanese, probably with some loss of face, when they moved into Indo-China. Whether this withdrawal was voluntary or forced appears to be controversial. Death, injury or illness cost the Japanese heavily in Kwangsi.

In central China, regular troops, strong guerrilla bands and revolting Chinese mercenary troops of the puppet regime became unusually active along the Yangtze, forcing the Japanese to evacuate their advanced positions and damaging extensively the long lines of Japanese communications. Regular Chinese units are known to have struck at Yangtze river ports between Hankow and Nanking.

In northern China, a force of 20,000 Chinese has been harassing Japanese positions in Shansi province. Organized raiders from this force have operated as deep into Japanese sectors as the Tientsin-Peking area.

The Japanese are losing heavily as a result of these Chinese raids, which may be the beginning of a new life for the Chinese. Certainly the Japanese offensive appears to have bogged down. The impasse which had been reached might have been broken had the Japanese succeeded in closing all gateways to China, including the Soviet entrance. Failing that, Japan is forced to carry on her undeclared war against a Chinese nation that is much stronger than she was at the outset of hostilities more than three years ago while Japan's own position appears to be materially weakened. Her losses in China have been offset by very few gains therein. Her military alliance with Germany and Italy has not been able to replace the iron formerly obtained from the United States and so necessary to Japan's continued operations.

The Chinese are not, of course, in any position to carry on a successful offensive against the Japanese at present. Their steadily growing army of more than 5,000,000, including guerrillas, is poorly equipped. Japanese air superiority will continue for some time and will hinder efforts at industrial expansion. Nevertheless, Chinese guerrillas seem capable of getting behind the Japanese lines without having to be dropped from or landed by planes, and their operations behind those lines are apparently just as effective as those of parachute troops.

As stated in the last issue of the *Review*, the Sino-Japanese stalemate may be decided by the outcome of the European conflict. The Chinese, despite loss of territories and heavy casualties, appear willing and able to carry on. The Japanese, unable to impose their will on the enemy, may have to be content with trying to protect what they have gained.

The War for the British Empire

By Captain M. R. Kammerer, *Infantry*

The Battle of Britain

The Battle of Britain, key operation in the war for the British Empire, has moved into its fourth month, a new record for continued, active opposition to the German military machine. The obvious reason for the inability of the Nazis to crush England as quickly as they disposed of their other enemies is the difficulty of finding a means of cooperation for the task between the superior German air force and the high powered German land force.

That such a means exists and may materialize is a fact which even the most optimistic Britisher would not deny. That this invasion did not materialize soon after the evacuation from Dunkirk was no doubt fortunate for the British. For every minute that the invasion was delayed was a minute gained in improving the British home defenses; and when memoirs are written and records and reports consulted, they will probably reveal an unprecedented amount of organization and activity following Dunkirk on the part of all agencies connected with Britain's defense.

The concentration of Nazi invasion equipment at points opposite British channel ports in early September pointed to the imminence of an invasion attempt. An increase in the intensity of Nazi bombings in England at that time would seem to be further evidence that England was about to be invaded. But rough seas and an unusually active and destructive R.A.F. thwarted the attempt. Two very necessary elements of invasion—surprise and confusion in the enemy stronghold—were turned on the invader. The possibility and the danger to England of a Nazi invasion will ever be a powerful weapon in German hands, for the British are compelled to keep at home a strong defense force that might be extremely helpful in other theaters of operation.

The Air Battle

The air battle between Britain and Germany has resulted in, if nothing else, a mass of confusing and conflicting reports. A few facts can, however, be gleaned from the confusion.

The war in and from the sky started on 8 August 1940, when German planes began to bomb British channel ports and channel shipping. For almost two weeks anywhere from 300 to 1,200 planes appeared daily over the southern coast of England in what appeared to be the preliminaries for a northward sweep of the island. The next objectives were the air fields of southern England—obviously for the purpose of forcing British fighter squadrons back to inland bases—and military centers that might shelter defense concentrations. On 5 September, mass bombardments of objectives in the Midlands were undertaken. London became the number one objective, but the industries of Manchester, Liverpool, Coventry and other large cities were hard hit.

The tactics of the Reich air force have undergone several changes during this last stage of operations. At first the attacks were restricted pretty much to daylight and the bombers were accompanied by a few fighters. Due to the effectiveness of the British pursuit craft, the numbers of accompanying planes were gradually increased. Still the number of casualties caused by the R.A.F. and by antiaircraft guns continued to mount until finally the German attacks were shifted to darkness in imitation of R.A.F. night attacks on the continent at points as distant as northern Italy.

Grave problems appear to have been presented in Germany as well as in England by these nocturnal onslaughts. Superior counteroffensive seems to be, for the present, the only effective means of defense against such attacks. Balloon barrages keep hostile planes high, as does antiaircraft fire. These add to the difficulties of accurate bombing at night. But they do not prevent bombing, however inaccurate, and the attackers, with inconsequential casualties, may safely unload their cargoes of bombs.

In recent weeks heavy bombers and their necessary protecting fighters have been giving way to fast light bombers operating without accompanying planes. These light bombers are not, due to their lighter bomb loads, capable of inflicting such heavy material damage; but they are extremely damaging to morale because they fly at practically invisible altitudes, because they fly over in ceaseless though small waves and because their speed enables them to "hit and run" before enemy pursuit can reach them.

The superior numbers of the German air force, planes and pilots, are compensated for to some extent by the superior quality and ability of British planes and pilots. The latter are handicapped by the greater distances to be flown in order to reach their objectives in Germany, while the German aviation is operating out of bases that are near to the objectives and at the same time much more scattered and difficult to find than are the British bases. Nevertheless, it appears that, as far as damage to industry is concerned, the two forces are at a standoff. Actually, this is to the advantage of the Nazis since they were so far ahead originally in their industrial, particularly military, production.

In purely air losses, the Nazi machine has undoubtedly suffered the most. Reliable sources report that figures on casualties, as given out by the British, have been much more accurate than those emanating from Berlin. Thus it would

appear that the British have bagged sufficient Nazi planes to give them a tie, if not the edge, figured on a percentage basis. The big factor, however, in favor of the British is the number of hostile aviators eliminated from further action. Every German plane shot down over England has meant the loss of its crew, killed or captured, while British crews most frequently have parachuted safely to British soil to return to the air immediately.

In the air war on morale, the Reich air force has been able to take full advantage of its superior numbers and shorter flying time between base and objective. Its task is further simplified by the fact that the population of Britain is more densely concentrated than is that of the German nation. Furthermore, the British had failed until recently to make the necessary precautions against air raids, while in Germany, many months before the war began, reasonable security was being provided. The problem of the R.A.F. has been and will continue to be for some time, not the destruction of the morale of the German nation—a difficult problem in view of German preparedness and dispersion—but the destruction of the enemy's facilities for continuing the struggle. Thus the R.A.F. has tried to concentrate on the immediate dangers to Britain, channel concentrations, German shipping centers, and vital industrial centers where a few well-placed bombs would seriously hamper the production of war materiel.

It is this war on morale that threatens most the British nation. The bravery and doggedness of the English people have stood up well under the rain of bombs. If this courage and determination can be maintained until the R.A.F. attains something resembling a parity with the German air force, the British Empire can be saved by its Royal Navy.

The Blockade

Blockade, a decisive weapon of the Allied Powers in 1914-1918, appears to be playing a less decisive though very important role in the British operations. Germany proper was thoroughly prepared for such action when war came in September, 1939. Her conquests during the past year have materially increased her resources, but they have also increased the numbers of individuals to be sheltered, clothed and fed. Very few of the conquered nations could be classed as economically independent. Overseas trade was as essential to them as it had been to Germany, while Germany's axis partner, Italy, is probably more vulnerable to a blockade than any nation of Europe. Fats and fodder, oil, copper and non-ferrous metals are the chief deficiencies of Hitler's Europe.

During the first twelve months of the present war, the British navy enforced the blockade on Germany with considerable effect and succeeded in keeping British shipping losses to a satisfactory minimum. A million and a half tons of axis shipping have been destroyed, while over a million tons of contraband goods, mostly food, have been seized. British losses, including those of her allies and those of neutrals, have been estimated at three and a half million tons.

The Nazi counter-blockade of recent months has produced a sharp rise in British shipping casualties, a rise which, if continued, would have dire consequences for the British Isles. Many small submarines have been added to the German fleet since the start of the war and, operating out of newly acquired bases on the Atlantic, they have accelerated this counter-blockade. One or more German raiders, like the Graf Spee, are active in the North Atlantic, harassing British convoys. It is reliably reported that these raiders are prepared to stay at sea for indefinite periods, depending upon prearranged schedules with neutral nations for the delivery at sea of food and fuel. The speed and armament of these pocket battleships enable them to pick off most, if not all, of the lightly armed freighters and merchant ships that comprise the convoys of the North Atlantic.

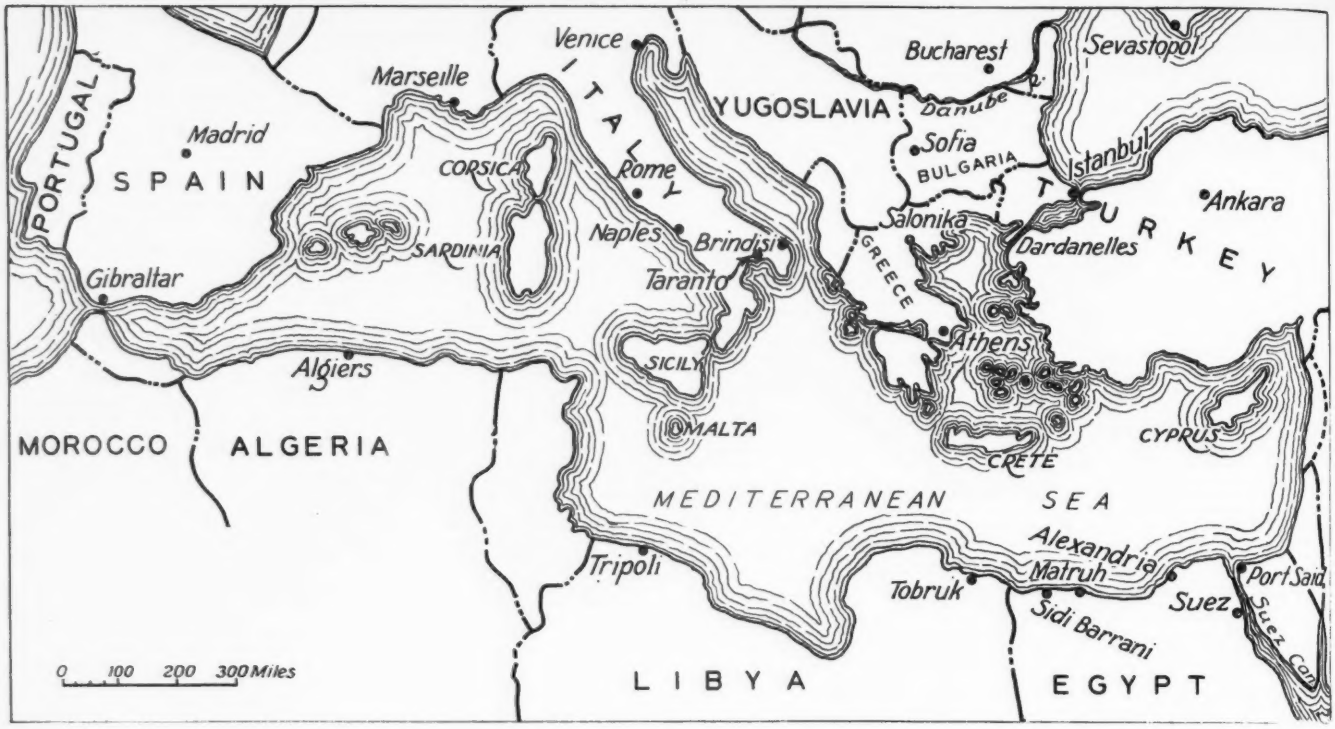
The submarine and pocket battleship campaign of 1940 will be much more difficult to combat than was the unrestricted submarine warfare of 1917. The submarines, as previously stated, have more and better located bases in 1940 than in 1917, while the British have lost their vital naval bases along the southern and western coasts of Eire. Nevertheless the problem should be capable of solution in 1940 just as it was in 1917.

Mediterranean Theater of Operations

The concentration of Axis activity in the Mediterranean became inevitable when the possibilities of a successful invasion of Great Britain began to disappear. For the British blockade of the Mediterranean has had and will continue to have constricting effects on Axis economics, effects which threaten to be serious, particularly for Italy, unless the blockade is smashed.

Bereft of most important raw materials, Italy is exceptionally vulnerable to a blockade of the Mediterranean and the longer the blockade continues, the worse will her position become. It is probable that Germany will be, if she is not already, forced to support Italy with essential supplies, thus sapping her own strength. Consequently, it surprised no one, much less the British, when Axis operations suddenly turned in the direction of the Mediterranean.

There are numerous ways in which the Axis powers can attempt to break British control of the Mediterranean. Some of these operations have already been started, others have certainly been discussed by the Axis rulers and will eventually be attempted. A combination of any or all of these might prove successful. First among these means is the Italian campaign in Northern Africa, with the British naval base at Alexandria and the Suez as objectives. A second step is the campaign against Greece in order to obtain control of bases essential for operations against the British in the eastern Mediterranean. A natural step, following the occupation of Greece, would be a campaign directed at Turkey. The third possibility is an Axis campaign aimed at Gibraltar from friendly Spain. Finally, the possibility of pressure on France to assist the Axis must



THE MEDITERRANEAN THEATER

be considered. Such aid might be in the form of naval assistance, the use of French bases in Africa, or, what seems least likely, declaration of war on Great Britain.

THE BATTLE IN EGYPT

The nature of the terrain in northern Egypt will determine more than anything else the course of the campaign to be waged there. West of the Gulf of Sollum the land drops steeply to the Mediterranean. East of this gulf, this cliff line gradually leaves the shore and merges into the Taref Mountains overlooking a wide coast belt that was probably once covered by the waters of the Mediterranean. Sollum itself, lying underneath the cliff, was untenable. Fort Abbas, built on the high ground to protect the city, would probably have sufficed against marauding desert bands, but it was unsuitable for defense against a modern army.

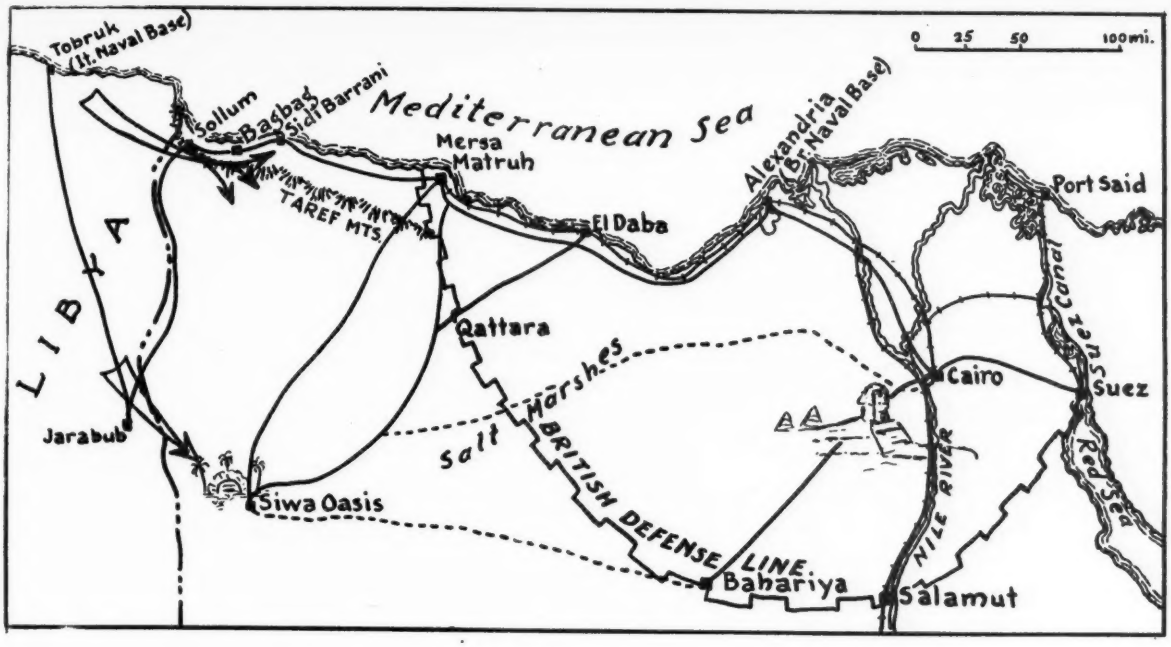
Between Sidi Barrani and Mersa Matruh, there are various possible defensive positions, but none of them could be expected to hold up very long against a well organized attack.

The possibilities of defense at and to the east of Matruh are much better. To begin with, a force reaching Mersa Matruh from Libya will necessarily be somewhat strung out along the 150 miles of semi-desert of the coast zone. The defending force would have well-developed water supplies as well as good communications with the main base at Alexandria. To the west of Mersa Matruh are several miles of soft white sandhills. Southwest of the city there is a series of wadies, deeply cut by the mountain rains that seep into the sands before they can reach the sea. This tangle of wadies, with rough hillocks intervening, plus the coastal sandhills, provides Mersa Matruh with strong natural defenses. That the British have reinforced these with artificial fortifications is very probable.

The operations in Egypt thus far recall the operations that took place in the same theater in the latter part of 1915 when the Senussi under Sidi Ahmed were prevailed upon by the Turks to attack the British forces in Egypt and the Sudan. The plans, as formulated by the Turks and Germans, called for simultaneous advances eastward along the coast and through Siwa and the oases to the Nile. Hostilities began 15 November 1915. The British then, as in 1940, withdrew from Sollum and other advanced posts, and made Mersa Matruh their base of operations. The rainy season prevented the British from following up a victory gained over the Senussi on Christmas Day, 1915, but late in February, 1916, General W. E. Peyton started a drive which overwhelmed the Senussi and drove them out of northern Egypt. The southern column of Senussites succeeded in occupying the oases. They proceeded no further, however, and were kept under constant observation by airplane.

On 13 September 1940, when Marshal Graziani started his drive from Libya, the British once again were prepared to evacuate their advanced positions in western Egypt in favor of the Mersa Matruh zone. According to the report of Marshal Graziani to Il Duce, he too had contemplated a second drive further to the south of the coastal advance, but a gathering of British mechanized forces on that flank forced him to concentrate all his efforts on the drive to Sidi Barrani, which was occupied 16 September.

It is apparent that the British contemplated offering no resistance west of Mersa Matruh. Reliable reports indicate that they were fully aware of the Italian plan of operations, even to the date the drive was to begin, and that they had withdrawn materiel as well as personnel, leaving behind



EGYPTIAN CAMPAIGN

nothing of value and carefully destroying that which would be of great importance to the Italians—the water wells.

Since mid-September, the Italian commander has cautiously been consolidating his coastal positions, for he is fully aware of the vital importance of a well-organized supply system in a desert theater of operations. The British, meanwhile, have made every effort to retard his consolidation by bombardments from the air and from the sea on Italian communications and supplies. For both sides realize that, regardless of how good an administrative staff may be or of how frugal the troops may be, the factor of supply limits the strength and effectiveness of a force in the desert. As operations move eastward, the British will be compressing the spiral spring which furnishes latent striking power while the Italians will be extending and weakening their own.

Marshal Graziani has other forces operating against the Egyptian oases from points farther south in Libya, but the desert hazards increase the transportation and logistic difficulties in those sectors to such an extent that a major effort is believed to be impractical.

Estimates of the number of troops involved in the operations in northern Egypt are unreliable. The British are known to have had approximately 150,000 men in Egypt, but reinforcements have increased those figures considerably. Marshal Graziani had at least 250,000 troops in Libya, including Italians and Libyan natives. A certain portion of this total has been withheld to provide security against a possible attack from the French colony of Tunisia. It is entirely probable that German assistance has been furnished to Marshal Graziani; weapons and advisers, with possibly some troops.

The importance of the Suez to the British means that every effort will be made to protect it. Its importance to the Axis would indicate a major effort to gain possession of it.

Italian Invasion of Greece

The Greek-Italian sideshow is of importance because of the possible influences of this struggle on that for control of the Mediterranean which, in turn, is of great importance in the Battle of Britain. The implications of the war in Greece are identical with those of the struggle for Norway in April, 1940. An Italian victory would mean new Axis bases for operations against the British Mediterranean strongholds. On the other hand, British assistance to the Greeks would give to the British an opportunity to establish a bridgehead on the European continent in direct contact with hostile land forces. It would also enable the British to use their sea power in support of land and air operations, and it might entice the Italian fleet into a decisive battle.

Grecian hopes for resisting the invasion of the Italians were pinned on the Metaxas line of fortifications (which augment the natural fortresses of the mountains along the Albanian frontier) and on the leader from whom that line of fortifications takes its name.

General Metaxas, one of the "toughest" men in the Balkans, received his military education in Germany, where the former Kaiser was wont to call him "a little Moltke." He has run Greece with a stern hand since coming into power in 1936, and has endeavored to build up a strong military machine. He succeeded in organizing a force of 150,000 regulars, with reserves that would bring the total to somewhere between 500,000 and 600,000. This "happy and willing" army is badly lacking in modern equipment and it is pitifully weak in aviation.

The Metaxas line, as originally built, extended along the Bulgarian frontier only. However, when Italy occupied Albania in April, 1939, work was immediately started on fortifications to protect Greece from the new threat from the northwest. Earthworks, pillboxes, tank traps and concrete forts were included in the line, which was built par-

ITALIANS ON THE MOVE IN THE DESERT *Wide World Photo.*

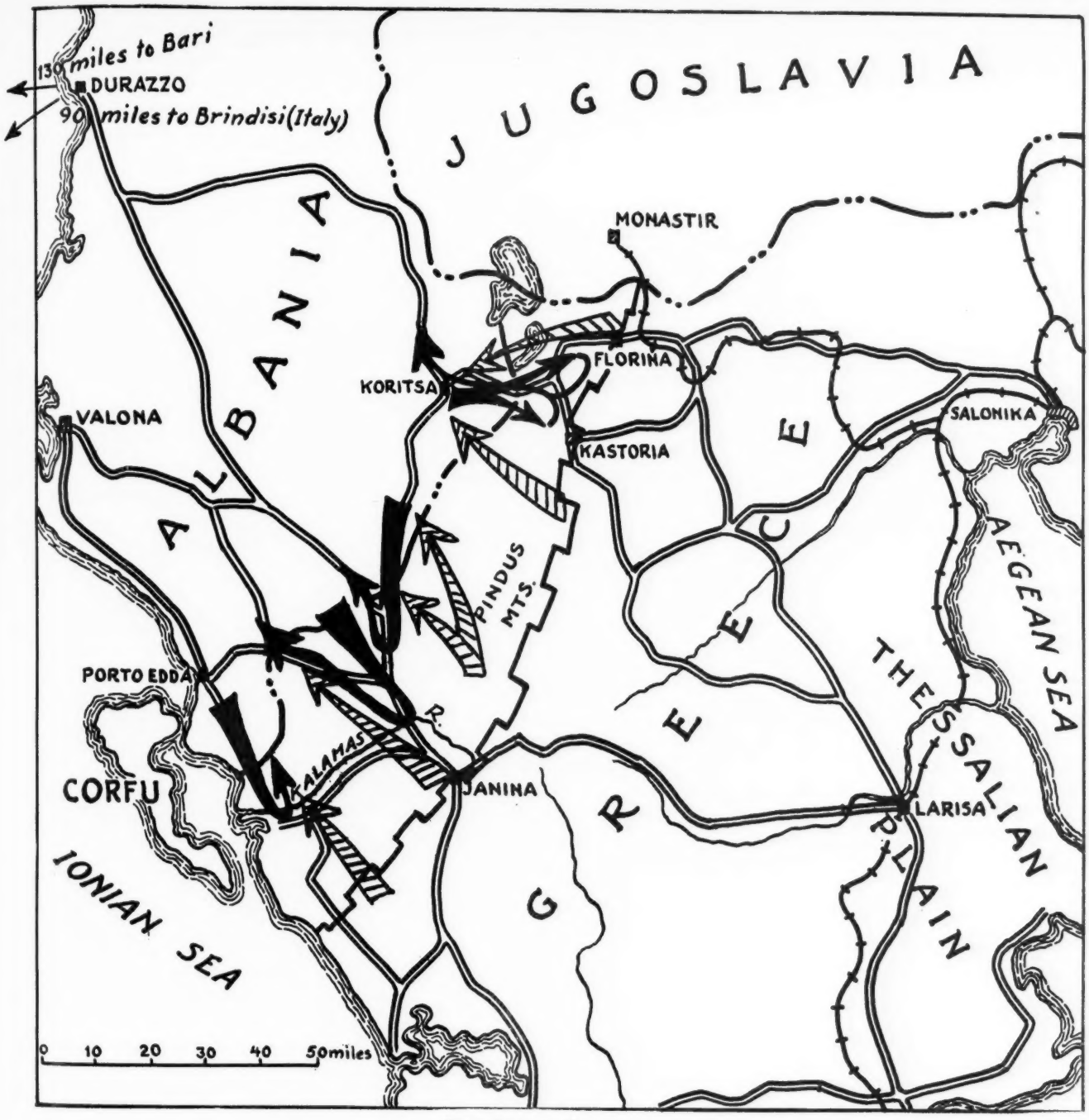
ticularly strong at strategic points covering the main routes across the mountains.

The Italian forces in Albania probably numbered 200,000 men, including some of Italy's crack mountain troops. Taking a lesson from their experiences at Guadalajara, this force was not encumbered by heavy mechanized units, but was equipped with light transportation and tanks. It has been supported by an air force that has encountered surprising opposition from the British Royal Air Force, as well as from Greek aviation and antiaircraft defenses. The Italian air force has had little effect on military operations in the mountains, although it has certainly interfered with communications and has attempted to force the submission of the nation behind the front lines.

The nature of the terrain determined the Italian plan of operations. The road net through the mountains permitted of only two drives. The northern effort, based on Koritza, would push through to Florina from which point road and rail connections run eastward to the port of Salonica, key city of the Aegean Sea and one of the greatest commercial outlets of the Balkans. The southern drive, operating out of Porto Edda, was directed at Janina, about 30 miles inside the border. This force could then follow the coastline to Athens and cut off Corfu, Cephalonia and other islands from the rest of Greece. Either or both of these drives could split upon arriving at its first objective (Florina or Janina) and send a force into the Thessalian Plain to cut Greece in two.

The fact that the Greeks have forced the Italians to call for reinforcements and to send Marshal Badoglio to Albania to supervise operations is some indication of the disappointment the Italians have suffered to date. They have been badly handicapped by weather conditions which have made mountain movements even more complicated than usual. But they should have expected such weather at this time of the year. The northern drive to Florina ran into little frontal opposition only to find that the Greeks had taken a circuitous route, perhaps across Lake Mikra Presba, and were in control of their line of communications to Koritza. The confusion that resulted enabled the Greeks to rout the Italians and capture their base.

The operations directed at Janina utilized the three mountain passes that converge on that town. The Centaur Division moving along the northernmost of these three roads was cut off and destroyed by ballet-skirted Evzone troops. The remaining two columns made considerable advances toward Janina, following heavy fighting at the Kalamas River; but these forces were finally forced to withdraw under steady Greek pressure, back into Albania.



GRECO-ITALIAN OPERATIONS

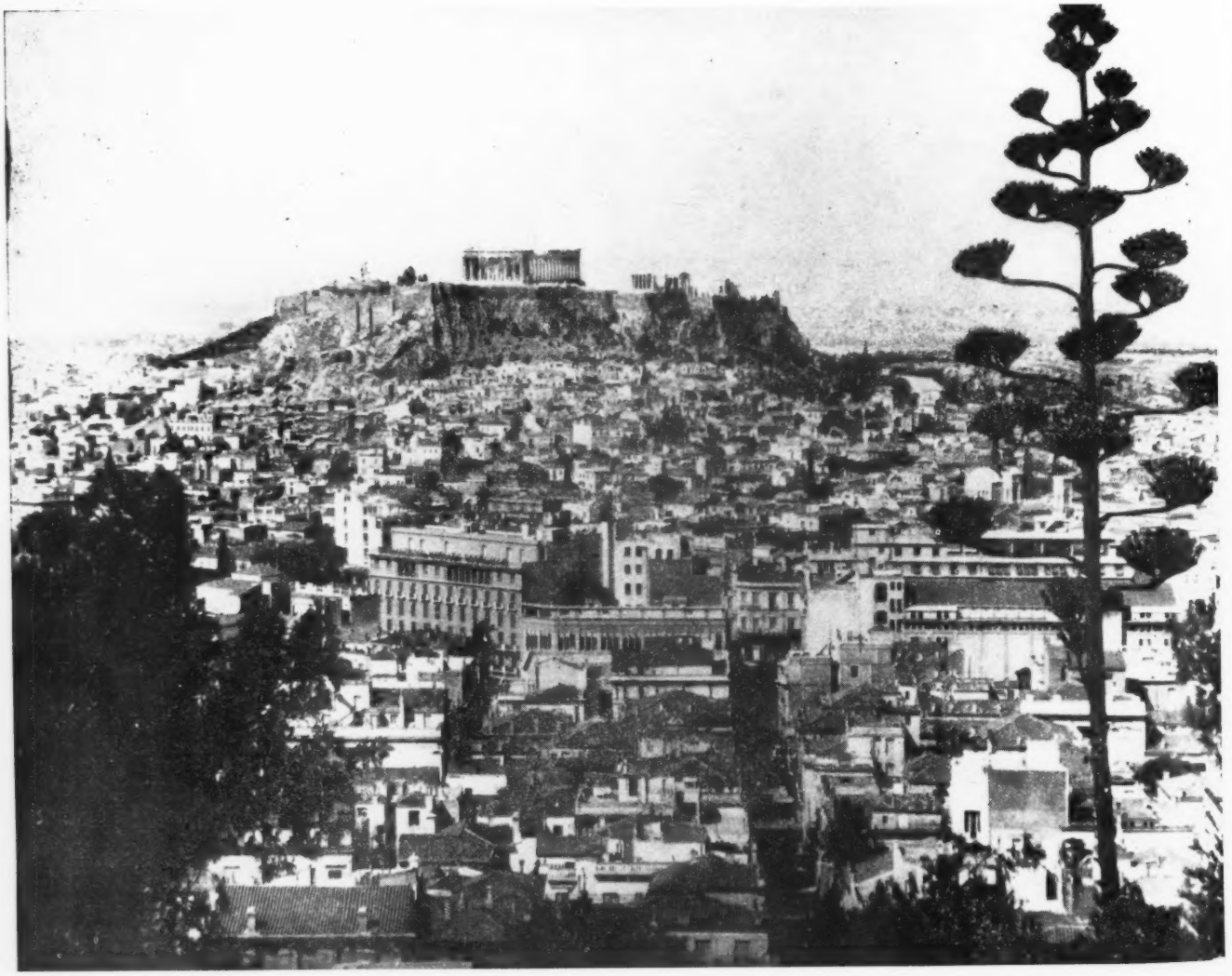
The planning and the execution of the Italian campaign is highly reminiscent of the Russian campaign in Finland, and the results will undoubtedly be comparable to those of the Russo-Finnish war.

Both Russia and Italy based their operations on what they considered the enemy's intentions rather than on the enemy's capabilities. Their agents in hostile territory appear to have overestimated the work done by their Fifth Columnists to create a state of unrest. Coordinated opposition was not expected, and, as a result, security measures, particularly essential in mountain operations, were neglected. The consequences were disastrous, for entire divisions, both in Finland and in Greece, walked into traps from which they were unable to extricate themselves. The task of the weaker nation, in both cases, was further simplified by the failure of the invader to consider and prepare for unusual weather conditions. "When formulating plans for mountain operations, possibility of sudden changes in weather must be considered. Arrangements are made for periodic weather reports. Alternate plans are prepared to provide for changed weather conditions." This quotation is from our forthcoming FSR, which also states, with regard to winter operations, "When planning tactical operations for execution during rigorous winter weather, careful consideration must be given to the probable effects of weather upon operations, health of troops, supply, evacuation, and maintenance of

signal communication." It must not be forgotten that the enemy may have allies, such as terrain and weather, coming to the support of his personnel and materiel.

Considering these last two elements, personnel and materiel, it is inconceivable that Greece can expect to continue to roll up her score of early successes. The British will give all air assistance possible, but planes cannot hold ground; and Britain cannot afford to assist with ground troops, occupied as she is in other theaters. Italy, on the other hand, can always call for Nazi assistance if the situation becomes too embarrassing.

By invading Greece, Italy gave the British their much sought-for excuse to occupy the island of Crete, where air and naval bases are established. These bases reduced considerably the distances to enemy objectives, and an intensification of air operations against naval bases and ports in southern Italy was immediately noticeable. These bases also facilitate British operations against the Italian line of communications to Libya. Whether or not this scattering of British naval forces will lure the Italian navy out into a decisive battle remains to be seen.



ATHENS, GREECE, WITH THE ACROPOLIS IN THE BACKGROUND *Wide World Photo.*

Foreign Military Digests

Digests of articles from foreign military periodicals; other items of interest from foreign publications are summarized in the Catalog of Selected Periodical Articles.

BY CAPTAIN M. R. KAMMERER, *Infantry*

The Infantry in Blitzkrieg

[From an article by Lieutenant Colonel Köhn, in *Militär-Wochenblatt*, 2 August 1940. Translated from the German in the Translation Section, the Army War College, Washington, D.C.]

There have been many critics who would explain away the achievements of the German forces in Poland and on the Western Front with such phrases as *blitzkrieg* and "new tactics." The success of the German Army is due not to any "secret weapons or miracle," but to splendid leadership coupled with a powerful striking force.

The soldier was not led astray by such phrases, but studied closely the requirements of war and the causes of success and failure.

There are two basic principles of the tactics of combined arms:

(1) "The object of all arms is to allow the infantry to reach the enemy while still in possession of sufficient fire and striking power to bring about the final decision.

(2) "Once the enemy is defeated, he must be pursued relentlessly, with every individual soldier putting forth every ounce of his strength."

As regards the first principle, the emphasis which the German Army places on its infantry is founded on the old and sound military principle that the man remains the decisive factor in battle, no matter how high the standard of technique may be.

The infantry is the principal arm. It is supported by all other arms so that it may close in on the enemy with a minimum of losses and engage him in close combat. While in the present war aviation and tanks frequently have translated this tactical principle into action so effectively that the infantry would encounter an already demoralized opponent, that proves merely the soundness of the German training methods of all arms, but does not indicate a restriction of the infantry missions. In general, the infantry must rely upon teamwork with the artillery, as evidenced by the operations in Poland and the decisive assaults on the Weygand and Maginot Lines. As in the past, the infantry must break the final resistance of the enemy; and, during the last few hundred yards, it must accomplish this unaided, relying solely on the power of its own weapons. Confident of its inherent strength and conscious of the force behind the spirit of the offensive, the German infantry gained victories which permitted the application of new strategic measures. The infantry bore the main burden of the fighting and proved itself the "queen of battles."

With reference to the second principle, the attacker keeps close on the heels of the defeated enemy and follows him, no matter how tired the troops may be. In this pursuit, tanks, aviation and light mechanized units develop the tactical gains into a strategic victory. However, the infantry also keeps moving up; the present war has demonstrated again how important it is for the infantry to know how to march. Pushing on and through the hostile ranks in relentless pursuit, the infantry does not hesitate to break its close contact with adjoining units temporarily, in order to prevent the opponent from regaining a foothold. That calls for determined and bold action on the part of the lower commanders, for in situations of that kind they must rely on their own resources and go into action without the support of the adjoining elements. This may well have been the secret of the strength of the Germans arms in the present war.

Viewed in the light of these tactical principles, the operations of the present war reveal the high standard of training of the German Army. The almost unbelievably small losses—as compared with the casualty figures of the World War operations—may be attributed to the perfect cooperation of all arms with the infantry, which enabled the infantry in nearly all instances to close in on the opponent with undiminished strength. The great successes of all arms group themselves around the achievements of the infantry which, as the principal arm, defeated the enemy in hand-to-hand combat and thus conquered technique itself.

Tactical Employment of Aviation Against Troops at Night

[From an article by Colonel N. Buimov, in *Krasnaya Zvyezda*, 3 June 1940. Translated from the Russian in the Translation Section, the Army War College, Washington, D.C.]

The effectiveness of aerial attacks delivered in the daytime by modern aircraft against troops on the march or in combat formations has greatly increased in recent years. Recent events have proved this. The actions of the German air forces in recent operations have shown that units without aerial support are incapable of engaging hostile infantry supported by powerful aviation.

The experience of the World War 1914-1918 has already tended to show that night operations would become routine. The utilization of darkness for the shifting of troops or the regrouping of forces is especially resorted to where the enemy enjoys superiority in the air. This principle is to be noted in regulations of all foreign armies.

The power, range and speed of modern aircraft preclude any careless movements in daytime even at considerable distances behind the lines. It is only rarely that we may discover the entraining or detraining, entrucking or detrucking, of troops in daytime in any strategical troop movements by rail or truck. Even more rarely will aircraft have an opportunity for the bombing of motorized columns. The experience afforded at Guadalajara has been fully appreciated by all. Attempts on the part of two British battalions in Norway to move by daylight were paid for dearly when German aircraft soon smashed their motorized columns.

Supply services, as a rule, will likewise operate only at night. During the operations in Spain, where aviation was employed on a rather limited scale, all roads in the rear of the Insurgents were usually free of travel. Isolated machines appearing on these roads were at once put out of action by Governmental pursuit aircraft. We may safely assume that no antiaircraft defense is capable of completely guaranteeing in daytime any object against aerial attack, especially against the skillful action of attack aviation.

All this tends to indicate that the operations of aviation at night should be on a parallel footing with the operations and movements of ground forces.

A well-trained air force, utilizing modern means of illumination, should encounter no difficulty in operating at night against hostile troops. As a matter of fact, there are a number of factors which favor night action. The aircraft warning service is incapable of efficient functioning at night unless it is equipped with special means for the spotting of aircraft. Antiaircraft fire has little effectiveness. The defensive action of hostile pursuit craft is retarded, while searchlights utilized by the latter and by the antiaircraft artillery may be put out of action by power-dive bombers. The main difficulty involved is that of locating the targets. But a discovered hostile objective at night is just as vulnerable as in daytime, since the considerably lowered altitude of the bomber increases the probable hits, while the lack of observation facilitates surprise in reaching the target.

At night the aviation must endeavor to destroy hostile troops whenever and wherever found, especially in entraining and entrucking areas, while en route, in detraining and detrucking areas during strategical movements by rail or truck; while on the march, in bivouacs and camps—whether this be in anticipation of a meeting engagement or in an approach to the battlefield.

In the case of a contemplated offensive, the continuous night operations of the air force against the hostile defensive zone, reserves and rear, may so exhaust the enemy as to render him incapable of effective resistance against the troops launching their attack at daybreak. A powerful attack against the dense combat formations of an enemy preparing for the launching of an offensive may disrupt his attack. Moreover, the air service must prevent the forcing of any water barriers at night, the landing of naval detachments, or the normal functioning of hostile communications. Special efforts must be made against a withdrawing enemy.

The question arises as to who should organize the action of the air service in the circumstances, and just how is the successful execution of any of the missions involved to be accomplished. Before attempting to answer this we believe it necessary to emphasize the fact that the principle of the mass employment of aviation remains the same at night as in daytime. The only difference involved is that at night the bombardment will have to be undertaken in small groups (flights or squadrons) and at times by single planes, echeloned in space and altitude, and utilizing clearly defined routes of flight. All this can be insured only by centralized coordinated control.

Consequently, night operations should be organized by army air service commanders, who should provide for more than the mere designation of missions for the army air service units. They should provide for a strict coordination of the efforts of all units, designating the definite time, route of flight, altitude and method of orientation in the execution of all missions. They must issue instructions respecting the situation of friendly forces, where the depth of the flight does not extend beyond the combat zone. And the question of concealment and camouflage on return flights to friendly air bases must be carefully worked out.

Every night undertaking is preceded by considerable preliminary work. This consists mainly of a detailed (day and night) aerial reconnaissance of the hostile dispositions and terrain with a view to the selection and verification of orientation marks for use as guiding points at night, especially where the flights are in considerable depth. This will apply in actions against hostile troop movements and formations at considerable distance from the front. Sight must not be lost of the need for emergency landing fields to accommodate returning aircraft units. Special thought must be given to the problems of illuminated orientation marks and guiding points.

Preliminary reconnaissances should be made to determine, if possible, the hostile antiaircraft defense system in the area of the contemplated action, the location of search-

light batteries and obstruction balloons. This information will also assist in the adoption of appropriate plans, in the assignment of the necessary forces and means, and in the adoption of the proper altitude for the bombing.

When a night raid is contemplated against hostile troops transported by rail or motor it is necessary to be in possession of information bearing upon the hostile movement. This information may be gained through special reconnaissance agencies, or the necessary deductions may be made from data furnished by aerial reconnaissance concerning intensive movements of empty rolling stock in a particular area, the accumulation of motorized equipment, etc. In order to obviate useless flights, supplementary reconnaissance flights are made at the approach of darkness. Upon discovering the entraining or entrucking areas or the beginning of movements, the reconnaissance planes call out the bombers by radio, indicating definitely the location of the targets.

The bombardment of entraining or entrucking areas is accomplished with the aid of flares. The approach to the target is effected with muffled motors. Upon reaching the target, the first flights drop the necessary illumination bombs along with fragmentation bombs, so as to facilitate the bombing by the successive bombardment groups. Motorized columns and rail movements are located by flying along the road or railway line, using flares if necessary. After spotting a train, the locomotive is fired upon and put out of action from power-dives, after which the remainder of the train is bombarded. Aerial attacks on motorized columns are more difficult, especially when the latter are dispersed. An effort is made to attack the head of the motorized column, endeavoring to create a bottleneck, i.e., to crowd the column for the succeeding attacks.

Attacks on marching troop columns, ordinarily performing short marches during the night, involve little difficulty if discovered; heavy casualties may be inflicted on such columns. They may be compelled to curtail the march, or to abandon marches over roads and to march by trails in a dispersed formation, which is not always feasible for the artillery and transport. In mountainous terrain the infantry too will experience difficulty in getting along without roads. The bombardment of troops on roads on a bright night may be undertaken without illumination. The target is overtaken along the road. Formation—in column of flights. Altitude —200 to 600 yards. Against illuminated targets machine-gun and cannon fire from power-dives is effective.

At halts or in bivouacs troops will usually seek cover from aerial observation. In such cases it is first necessary to set on fire the probable area of the disposition of the troops and to drop the bombs after locating the hostile troops on the ground. While the actual casualties inflicted upon the enemy may not be great, the effect on their morale will be considerable.

Preparatory to an attack, incessant night bombings on the hostile defensive zone will exhaust the enemy and demoralize him. The bombardment objectives may include: combat formations of the enemy, hostile artillery, rear installations, headquarters, centers of resistance and antitank areas, along with troops engaged in field fortification work. The aviation personnel should be kept posted on the situation of the friendly forces. Orientation markers, arranged to guide the bombers toward the enemy should be so located as to remain unobserved by the enemy. Flights to the target may be guided by searchlights or light beams. Artillery fire may also be utilized in guiding airplanes to their target. The approach to the target is made with muffled engines. Departure from the target after the bombing is effected at maximum speed. In order not to disclose the direction of the main effort the aerial attacks at night should be spread out over a wide front. The hostile artillery and reserves should constitute the principal objectives.

For the purpose of disrupting hostile plans for an attack, the aircraft should be utilized from the very moment the approach of the enemy is discovered. Powerful attacks against hostile combat formations might well be undertaken where the enemy has one division plus tanks and corps artillery to two miles of front, and echloned to a depth of two or three miles. As much aviation as possible should be employed against such a disposition.

In night raids on troops preparing to cross a water barrier, an effort is first made to strike at their lines of departure, where the equipment to be used in the crossing will usually be located. In most instances this will consist of camouflaged areas within one mile from the points where the actual crossings are to be effected. The crossing material may thus be destroyed along with the hostile manpower.

If the enemy should effect a crossing with his leading echelons with the aid of special boats, pontoons or ferries, pursuit aviation may be utilized against individual groups of the enemy. Established crossings may be attacked by bombardment aviation. Organized antiaircraft defense should be neutralized with the aid of specially designated pursuit ships, which should endeavor first of all to put out of action the hostile searchlights.

In the case of action against rear installations and hostile communications, the principal effort should be made against the mobile equipment and bases supplying the same. The latter mission may be accomplished in daytime. Systematic action against hostile communications will curtail the supply of material and equipment and deprive the enemy of sufficient ammunition, provisions and fuel. Where a satisfactory system of highways and improved roads is available, transport elements may well slip out from under aerial attacks; however, where roads are scarce, or in the case of mountainous terrain, this will be practically impossible. Only poor meteorological conditions may lower the effectiveness of aerial attacks on communications.

Aviation is particularly effective against a retreating enemy. Lack of proper control, weakened antiaircraft defense, a disposition to become panicky—all these simplify the task of friendly aviation. Well timed air attacks against a retreating enemy might well halt the movement and disrupt the columns, particularly where there is a lack of sufficient roads in their line of retreat.

From the foregoing the following conclusions may be drawn: Aerial attacks may be delivered just as effectively at night as in daytime; the aviation personnel must be properly trained for night activity (especially in night reconnaissance); the organization of massed air attacks at night is the function of higher commanders; provision for the utilization of illuminated markers and guides should be made with the aid of special detachments.

Air Landing Parties and How to Combat Them

[From an article by Captain V. Nikolsky, in *Krasnaya Zvyezda*, 10 July 1940. Translated from the Russian in the Translation Section, the Army War College, Washington, D.C.]

The practicability of the employment under certain circumstances of air landing parties has been fairly well established by recent operations in Europe. The tactics of air landing parties might be said to have stood the test of battle. The experience of the Germans has shown that parachute landing units under certain conditions may serve as a sure means of disorganizing the control of troops and the communications of the enemy. In cooperation with troops advancing frontally, parachute landing units may exert a decisive influence on the course of operations and bring about the complete defeat of the enemy in a particular area.

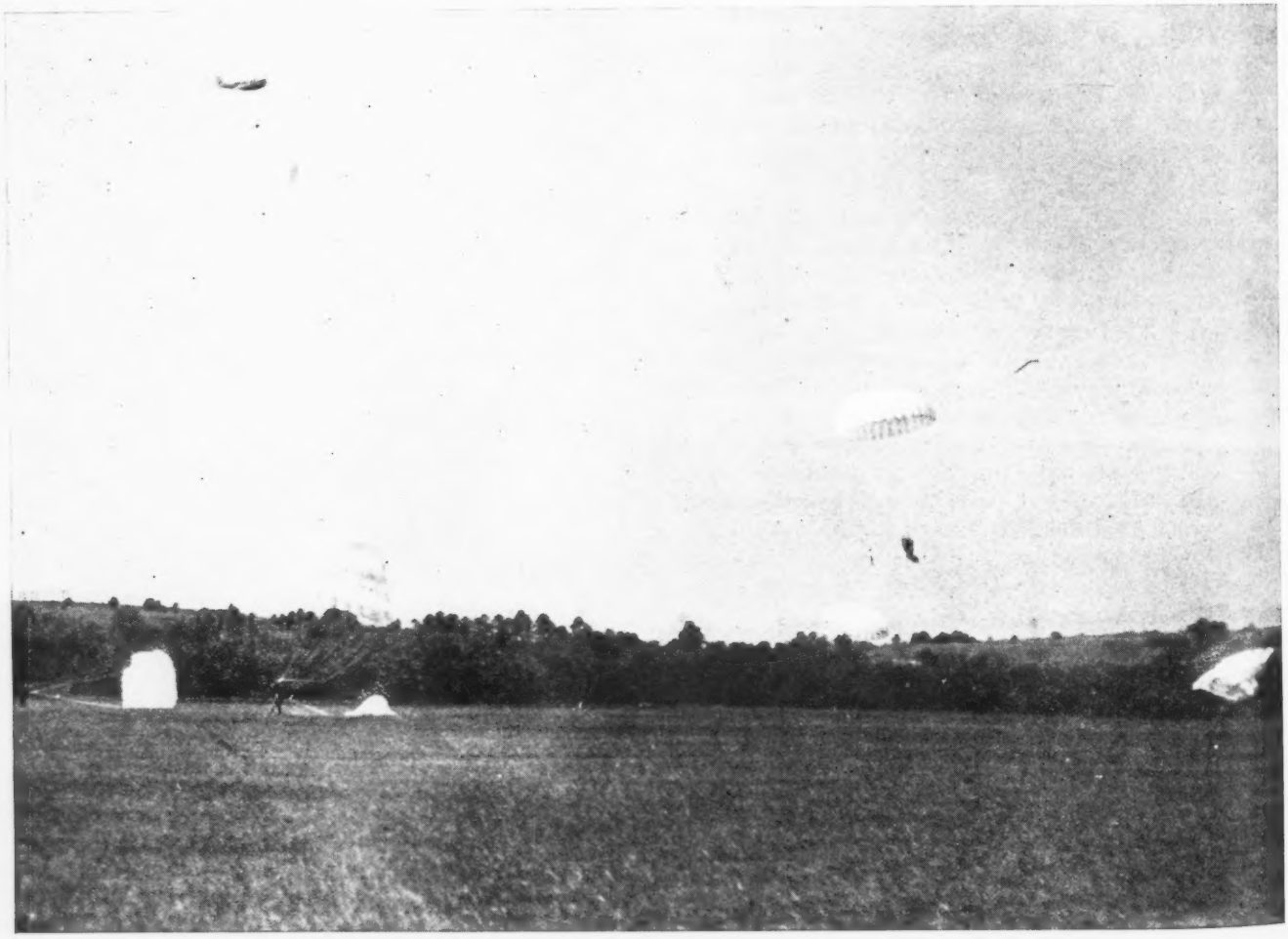
The basic missions of the air landing parties are: to seize and hold airdromes, crossings and important points; to delay retreating hostile units; to repel approaching reserves; to deliver attacks on important objectives (factories, railway bridges); to assist friendly forces in the capture of fortified positions, forts; to disrupt hostile communications; to assist units subjected to hostile envelopment.

Air landing parties, according to their method of landing, are divided into three groups: parachute detachments, detachments landed by airplane, and a combination of the two. The landing of troops by airplane was employed by the Germans mainly in Norway.

Detachments landed by airplane are made up of stronger forces than those dropped by parachute. The German division of parachutists and air landing troops was transferred simultaneously by air with the German artillery and small tanks. Air landing undertakings require extensive preliminary preparations. Otherwise even small hostile forces may disrupt all measures adopted for the air landing.

In order to effect a landing on an airdrome, the airdrome must first be seized. With this in view, before landing by air the main party, a special detachment is dropped by parachute in the vicinity of the airdrome.

True, the Germans landed troops by airplane in Norway without the preliminary dropping of parachutists. But efforts to repeat this at Belgian airdromes did not produce the results attained in Norway. Certain airdromes were found to be blocked by motor cars, which served as a sort



AMERICAN PARACHUTE TROOP IN TRAINING IN GEORGIA *Wide World Photo.*

of barrier for the German airplanes that attempted the landing of troops in the darkness before dawn.

In view of the above, the conclusion would suggest itself that the combined landing by parachute and airplane will probably find more frequent utilization. The greatest German air landing undertaken was that at Rotterdam. This consisted of a landing operation both by parachute and airplane on the airdrome and by hydroplane on the adjacent river.

Air landing operations involve much difficulty and risk. There is the possible defense action against them by mobile units (motorized, motorcycle and cavalry units) and hostile aviation. The landing of a large number of airplanes is quite difficult of concealment. Consequently, mobile ground forces will endeavor to utilize the time of the actual landing or dropping of parachutists to crush these in detail. With this object in view Great Britain has organized special antiparachute corps made up of mobile and well-armed land units distributed at all strategical points. Similar mobile land units for use in defense against hostile air landing parties have also been organized in other countries. But, no matter how great the number of mobile land units employed by a particular army, it is quite impossible to cover all, or even the more important airdromes, railway centers, bridges and industrial objectives with these.

It is evident that considerable thought will have to be given to the organization of the defense of important objectives. This is deserving of serious attention and of a special and more detailed analysis. The poorly organized defense of the Norwegian, Dutch and Belgian airdromes was one of the reasons why the German parachute troops were able to seize and prepare them for the landing by airplane of the main forces.

Small forces should be capable of defending vital objectives and especially airdromes provided the latter are equipped with well camouflaged "miniature" permanent positions (pillboxes) employing a small number of men armed with machine guns and antitank guns. Two or three such positions will suffice either to destroy the landing party or at least to get it involved in action and to hold out until the arrival of the mobile units designated for the liquidation of hostile air landing efforts.

There should also be maintained at airdromes special means for the blocking of landing fields. These should be inconspicuous, simple, and convenient.

Considering the fact that air landing operations call for much secrecy, since surprise is the essential element of their success, it is necessary first of all to consider aerial reconnaissance, observation and communication. The observation employed against hostile air landings must be particularly well developed. In some countries this is the function of the system of antiaircraft defense of the frontier or of the country as a whole.

The primary means of action against landing parties is provided by the aviation. Possessing powerful armament and great speed, the aviation, in view of its swift action and flexibility, when employed in conjunction with mobile troops, assumes a vital role in the destruction of hostile air landing parties. In the performance of its primary mission—that of gaining mastery of the air—the aviation eliminates the very possibility of hostile air landings.

Air landing undertakings involve a variety of different elements. These include a reconnaissance of the area where the landing is to be effected, destruction of aviation at airdromes in the vicinity of the landing; concentration of the air landing detachment at the airdromes whence the operation is to be launched; flight to the point of the landing (or dropping by parachute); the dropping of parachutists and landing of planes and, finally, the action of the landing party to be followed. This determines also the nature of the action of friendly aircraft against the air landing party. During the phase when the enemy engages in reconnaissance and makes his preparations for the air landing undertaking, the pursuit craft should destroy the reconnaissance planes in air combat. In addition, pursuit, power-dive and other bombing planes, attack hostile airdromes at which the preparations are under way for the air landing operation, destroying the hostile aircraft, manpower and equipment thereat. When the air landing party has taken to the air, the aviation engages the hostile pursuit craft protecting the airplanes transporting the landing party, especially the heavy airliners loaded with men and military equipment. During the dropping of parachutists or the landing of the airplanes, as well as during the concentration and action of the party after the landing, the aviation attacks the hostile aircraft and manpower from the air, with a view to the destruction of the landing detachment.

The aviation engages also in aerial combat with the pursuit craft covering the point of the landing and the zone of action of the hostile landing units. In the event of the dropping of separate parachute detachments by an air landing party, these may well be destroyed by machine-gun fire.

The effective action of aircraft against hostile landing parties will depend first of all on the cooperation of the pursuit, bombardment and attack aviation, and the mobile ground forces. An extensive air landing undertaking, as a rule, will be carried out with the protection of pursuit aviation units. Without such protection it would be a failure. Hence the pursuit aviation must cover the action of friendly bombardment and attack aviation, destroying the hostile pursuit craft.

Action against hostile air landing parties should be undertaken with small groups of three to ten airplanes, primarily from low altitude and with power-dive action and the use of small fragmentation bombs, gun and machine-gun fire. The best results will be obtained by strafing action the moment the enemy begins his actual landing, i.e., when the air landing detachment has not yet had an opportunity to take cover and to organize his antiaircraft defense.

Aside from the missions above presented, aviation may be employed in the transfer of land units for employment against air landing parties at the area where the enemy is attempting to utilize his air landing forces.

Flame Throwers

[From an article in the July 1940 issue of *Allgemeine Schweizerische Militärzeitung*, Bern, Switzerland. Translated from the German in the Translation Section, the Army War College, Washington, D.C.]

Studies dealing with flame thrower construction date from the beginning of the present century. Germany was the first country to experiment with this type of weapon. By the outbreak of war in 1914, the German Army possessed flame throwers and had gathered considerable experience in their technique and tactical employment.

The first flame thrower assault took place 25 February 1915, at Malancourt, on the Western Front. The successful application of this new weapon by German troops led the Allies to construct similar types of flame throwers.

Technical Data

The construction of all flame throwers is based on one and the same principle. One container holds the oil which is a mixture of tar residues, hydrocarbons, creosote and carbosulphide. A second container, connected with the first by a valve, is filled with compressed gas, preferably nitrogen, which serves as the propelling agent.

As the valve is opened, the oil is forced through a pipe. Upon emerging from the nozzle, the oil is ignited by means of a fuse or pilot light.

The range of flame throwers depends upon:

(1) The amount of pressure exerted by the propelling gas. This pressure must not exceed a certain limit, in order to prevent the oil stream from scattering.

(2) The thickness of the stream of flaming oil. Varying with the duration of the flame thrower assault, the oil consumption rises with the increase in diameter of the oil stream.

Thus the range and duration of effect of the flame thrower depend upon the weight of the equipment and oil that has to be carried along.

Two main types of flame throwers were used during the World War, namely, fixed and portable equipment.

While fixed types of flame throwers are not in use today, their construction data probably may be applied to flame throwers built in tanks. These modern flame throwers have a range of over 300 feet and can deliver from 50 to 100 bursts, with a duration of fire of from one to three minutes. Italy has for a number of years armed her tanks with flame throwers; and the German Army employed them with great surprise effect in the Battle of Flanders.

The construction of portable flame throwers, no doubt, has been greatly improved, especially by the use of light materials. Their range now measures up to 115 feet; and their duration of fire between 30 to 40 seconds, in as many bursts.

The Effect of Flame Throwers

The stream of fire acts primarily through the flaming oil itself as well as the heat whose radius measures approximately three times the diameter of the stream of flaming oil. The flame thrower personnel is protected against the heat by asbestos cloaks. The oil stream acts further by the poisonous combustion gases, especially where the stream is directed into closed spaces, such as dugouts and bunkers. As the stream strikes a surface, the incomplete combustion creates carbon-monoxide.

At the point of impact, the effect of the oil stream is immediate and complete. The moral effect is even greater than the material effect; this is definitely proven by the number of prisoners taken in flame thrower operations. On 1 June 1916, the German 66th Infantry launched an attack in the woods of Caillette, near Verdun. The assault was preceded and strongly supported by a flame thrower company armed with five fixed and twelve portable flame throwers. Besides gaining considerable ground, the regiment captured 1,900 prisoners, including two regimental commanders and 60 other officers.

In fighting tanks, the flame throwers are aimed at the slits and other apertures, the oil setting fire to the interior of the tank. Moreover, when a tank is enveloped in flames, the air inducted by the motor is deprived of its oxygen. This reduces the speed of the tank, or stops the motor entirely.

The Tactical Employment of Flame Throwers

Fixed flame throwers were employed for offensive action in position warfare, where the opponents faced each other at close range. The fixed types served to put out of action the enemy in the advanced trenches and deliver fire concentrations with surprise effect, thus preparing the invasion of the hostile front lines. This type of equipment is of no avail in modern warfare; and no mention has been made of the employment of fixed flame throwers in recent operations. Though fixed flame throwers may be used effectively in the defensive to cover small sectors, their effect remains of limited duration. In certain circumstances, fixed equipment might play a role in short-range defense of bunkers and fortifications.

Portable flame throwers are included in the armament of assault troops. Protected by the fire for destruction of all weapons and carefully taking advantage of all natural cover, the assault troops armed with flame throwers close in on the hostile strong points and bunkers. Resistance encountered in the intermediate zone is overcome with hand grenades and automatic rifles. If the flame thrower operator finds that he cannot approach his target within range of his equipment, he delivers a burst and pushes on to effective range under cover of the smoke screen created by the flaming oil. Depending upon the situation, it may be well to blast the obstacle before committing the flame throwers to action; then again, the demolition may be carried out with the support of the flame throwers. Their function then is to wipe out or neutralize close resistance, or, by their smoke screen, to cover the advancing demolition party against observation.

Flame throwers play an important role in street fighting, where they are used to smoke out cellars and buildings at

ranges which prevent a good aim with hand grenades at windows or doors. Besides, flame throwers will cause local fires, thus contributing largely toward spreading confusion among the enemy.

In the offensive, the flame thrower is not so much a weapon of favorable opportunities, but an arm which should be assigned a definite mission based on careful reconnaissance. Therefore, the flame thrower as such is not suitable to assure assault troops continuity of the attack within a given zone. In order to gain that assurance, the assault troops must be accompanied by a number of flame throwers commensurate to the number of individual tanks. Figures as to the requisite number of flame throwers cannot be given, unless the hostile situation is clear. Besides supporting certain individual actions, the primary employment of flame throwers seems to consist in lending the assault troops that moral superiority which is essential to the penetration and the continuity of the attack. Their use is very effective at the moment when the support of the rear echelons ceases. In the recent operations, flame throwers have played a vital role in assaults directed at bunkers and have been used against them jointly with other weapons of offensive fire power.

In warding off a counterattack, the flame thrower is employed for defensive action at close range. On the other hand, portable flame throwers will rarely be committed to action at the outset of a defensive action.

Little information has been published concerning the tactical employment of flame throwing tanks. They may be used for antitank defense and against bunkers, provided the approach is accessible to tanks.

Defense Against Flame Throwers

While there is no individual protection against the stream of flaming oil, it should be feasible to provide collective protection for bunkers. With all due respect to the local material effect, it must be brought home to the troops that the success of the flame thrower depends mainly upon its moral effect. Any man who does not lie within the radius of the oil stream must direct his action immediately against the flame thrower. That is the best method of defense, for the operator of the flame thrower constitutes a fairly large target, and the duration of effect of the flame thrower is relatively short. Once the moment of extreme moral strain is overcome, the success of the flame thrower reduces itself to the actual material effect, and the attack of the hostile troops loses much of its vital momentum.

What Must the Military Commander Demand of the Military Surgeon?

[From an article by Colonel Eugen Bircher*, Swiss Army, in the July 1940 issue of *Allgemeine Schweizerische Militärzeitung*, Bern, Switzerland. Translated from the German in the Translation Section, the Army War College, Washington, D.C.]

The demands which warfare in totalitarian war makes upon the medical officer may be condensed into one sentence: "It is the duty of every medical officer, as a soldier, to direct his entire work and mode of thinking at one goal, namely, to strengthen the moral and physical strength of the nation in every respect; and to restore to health safely and quickly that part of it which has been injured and weakened."

This demand represents a great and far-reaching aspiration; yet it is the only way of satisfying the exigencies of modern, all-engulfing war. This demand is primarily of a military nature; and medical logic must be of secondary consideration.

The functions of the surgeon are threefold:

(1) He must share in the preparations for war.

(2) In war, he must pursue his special functions as a military surgeon in combat.

(3) After the combat, he must heal the injuries and restore the soldier quickly to his place in the fighting line.

Yet the most important and supreme aim of the military surgeon is and must remain: To further and strengthen the striking power of the army.

The medical officer can achieve this aim only if he is thoroughly familiar with the nature of war. Besides hygiene and military surgery, he must know exactly what mental and physical requirements modern, totalitarian war imposes upon the fighting man, both commander and trooper. The picture of modern war must be as clear to him as to the tactician. His duties as a medical officer presuppose some knowledge of tactics. He must know further what demands the military commander will have to make upon his soldiers. Therefore, the medical officer must know the army, its spirit and its organization. He must be familiar with such nonmedical matters, for the medical officer—more so than many other men in the service—is called upon to cooperate in building up the morale of the troops and to help in instilling the rigid discipline which is essential in battle. He must proceed in the execution of his daily task not primarily from a medical and humanitarian standpoint, but act as a soldier and base his thoughts and actions first and foremost on the military requirements. Many "sentiments" that play a role in the life of the surgeon in civil life must make way to the harsh realities that await the soldier in war.

The medical officer can truly appreciate these needs only if he has passed through the school of the soldier and

**Translator's Note:* Colonel Bircher, the author, commands the 5th Division of the Swiss Army (the organization of the Swiss Army does not provide for the rank of general, except one who has been appointed for the duration of the present emergency).

In private life an eminent physician and surgeon, Colonel Bircher serves also as Editor of the *Allgemeine Schweizerische Militärzeitung*, a Swiss military publication. He is the author of a number of outstanding military works, the latest of which are "Schlieffen—Man and Idea," 1937, and "War Without Mercy," 1938.

ITALIAN FIELD HOSPITAL IN A SAND STORM *Wide World Photo.*

knows the wants of the common soldier and his existence in the ranks. The medical officer must be familiar with all phases of military life. The tactical knowledge which he acquires in this manner will do him no harm; on the contrary, it will serve him in good stead.

The soldier must realize that, even though he is a patient in a hospital, he remains a soldier; and that the medical officer is not only a surgeon, but an officer whose instructions he must follow in compliance with army regulations. However, the soldier will do so only if it is demanded—which applies equally to the relations between officers and men in the line. Though treating the soldier-patient according to the highest principles of modern medical science, care must be taken not to pamper him or develop him into a neurasthenic, by giving him superfluous examinations and undue attention. Drastic steps must be taken against men who would shirk their duties by feigning illness and requesting extended sick-leaves.

The military commander must demand that the hospitals strengthen the combat power of the soldier and not produce neurasthenics who will never be good soldiers and officers.

All of this requires careful consideration in the training of medical officers for the army. Especially in the hospitals of the rear, the surgeon, whether he be of the Regular Army or Reserve, must bear in mind that we need soldiers at the front, that is, soldiers with a warm heart, a strong will, and a clear mind. These characteristics harmonize in every respect with a humanitarian point of view.

Even in time of peace, the medical officer must know the nature of modern war, in order to be able properly to carry out his functions as an examiner of recruits. It is absolutely wrong to let fiscal or other reasons govern the medical standards of recruiting, that is, to declare 40 to 50 per cent fit one year, and jump to from 70 to 80 per cent the following year, because of a change in the political or financial situation. There is no external anatomical system of recruiting which can be applied to the soldier, for the moral faculties of the individual play a great and decisive role.

Many are the examples taken from the World War, which show that small, inconspicuous soldiers proved their mettle in any situation, whereas athletic types frequently were subject to powerful fear complexes. The problem of the constitution of the character is more important in the selection of recruits than the purely morpho-physiological scheme of recruiting. What we require is the average tough endurance which will overcome the enormous moral and physical strain of combat. Besides the essential character and its training, this calls for military drill which in combat eliminates all reactions upon the morale and causes the soldier to carry on automatically. In order to judge these matters correctly, the medical recruiting officer must receive military training in time of peace and understand its nature.

The military commander cannot judge the professional training of the medical officer. It is his duty to see that his special tactical suggestions, with regard to the welfare of his soldiers, are carried out to the letter. The commander of troops should heed the advice of his unit surgeon, especially if the latter shows concern about the care of the soldier; for the welfare of the soldier in war and peace is the highest charge of the commander of all grades.

The promotion and maintenance of the physical standard of a unit depends largely upon the measures taken by the medical officer. No conscientious commander of troops will fail to accept sound advice, as long as the strategic and tactical situation permits it. There are moments when the strategic or tactical objective is more important, and sacrifices must be made. It is the military commander who decides, for he bears the responsibility.

In order to prepare for war, the medical officer in time of peace must not confine himself to surgical work.

It is all-important to the military commander that he be able to visualize war and combat. The character of war consists primarily in the effect of the weapons, which are the decisive factor in modern combat. That calls for experiments showing the effect of the weapon on the organism of the human being and animal as well as for tests dealing with the material effect of the weapon on inanimate targets.

Prior to the World War of 1914-1918, it was customary in nearly all armies to make extensive tests demonstrating the effects of small arms and artillery projectiles. All of this highly instructive research not only produced valuable lessons in military surgery, but became the foundation of the military surgery of the first World War; it proved to be sound in every respect. Tactics, too, benefited by those lessons, in so far as the problem of providing cover was submitted to thorough tests.

The evaluation of gunshot wounds was fully confirmed. Pre-war experiments with wounds on the body of the human being and animal taught valuable lessons to the officer of the combat branches as well as to the medical officer. The officer of a combat unit should be familiar not only with the effect of weapons on inanimate targets but also with the nature of gunshot wounds. To say the least, he must know what physical injury to expect in battle; and he must be able to visualize—though to a lesser degree—the grim aspects of the battlefield, in order to be a worthy example to his troops not only in life, but at the point of death as well. The commander of troops must be steeled to stand the sight of blood, which is an important factor, especially during the baptism of fire. Surprises may be in store for us, if we fail to determine this fact in time of peace. On the occasion of a lecture on the phenomena of battle, on its reality, which showed the gruesomeness of war wounds in all of their tragedy, and especially during the demonstration of surgical films, we have witnessed surprising reactions, confirming observations made by us during an accident on the target range, when a soldier was struck by a bullet which penetrated his cheek and caused him to bleed profusely. Many of the spectators were not prepared to stand the sight of blood, which is essential in war. In the case of several men, the impression on the morale was so overwhelming as to cause their complete collapse. From the standpoint of the military commander, it is to be regretted that the troops do not receive the benefit of that kind of instruction; and, above all, that the medical corps has abandoned the tradition of making tests with live ammunition.

That may be due to the natural horror of such matters, which followed in the wake of the sanguinary experiment of the World War. While at the outset of the operations of the first World War serious casualties due to rifle fire were predominant, the lessons of the Russo-Japanese War and the Balkan Wars confirmed the realization that a considerable increase in wounds due to artillery fire had to be expected. The same experience has been confirmed again in the present war. We must count on a considerable predominance of splinter wounds (artillery shell, mines and aviation bombs). Practical research in the nature of splinter wounds would have been of great value, in view of their great influence upon surgery in modern war.

Besides the purely material effect of weapons on the human organism, the first World War brought to light another problem of no mean importance: The psychological effect of weapons.

Hönig, in 1882, was the first man to demand that the tactics become more psychological. However, nobody knew how to interpret that warning. By the outbreak of the World War, the words of Hönig had been forgotten; yet the War proved every one of them to be true. René Quinton, the French biologist and army officer, fittingly defines the psychological effect in the sentence: "Battles result not only in dead and wounded. The bullets kill one man and throw fear into a thousand men." Or, as Hönig says: "It is more important to slay the courage of the enemy, than to kill a large number of his men."

Combat has become an outstanding psychological problem; and it must be evaluated as a purely biological science which no conscientious and responsible military commander may disregard. Psychology is the sound understanding of the human mind. Yet this faculty is rare and not original. The science of psychology must be taught; and that task devolves primarily upon the surgeon because of his entire education and career. Important are the words of René Quinton: "In an army that has not been in war, the officers do not know what to expect of their men. In war all men are equal."

Therefore, if we wish to discuss the problem of war psychology, we must accept the fact that its nucleus consists in the determination of the psychological effect of weapons. In other words, the question arises: What effect have the momentary events in combat upon the morale of the soldier? Most important of all is the question: How does the soldier act upon his first entry into battle, that is, during his baptism of fire? By all rights, the military commander should determine this; yet scientific psychology is not always a very popular matter with army officers. Some countries differ in this respect; they appreciate the advantages of a psychological examination, especially in the selection of personnel for aviation and tank units as well as radio and telephone operators. The psychological muster should be just as important as the physical and mental examinations. While that is a special function of the surgeon, we may point out that it requires of the medical officer a basic theoretical and practical knowledge of psychology the same as of his other professional work. That, in turn, requires the

medical officer to learn to think as a soldier and to distinguish between the humanitarian aspects of the surgeon and the heroic viewpoint of the soldier. Moreover, it has been established that, in the last war, the surgeon made the most accurate observations of the behavior of the soldier during the baptism of fire and the various forms of mobile and position warfare; and that the surgeon is best fitted, therefore, to analyze the effect of combat upon the individual. Thus the surgeon in combat can feel not only the pulse of the wounded soldier, but of the entire unit. The psychological problem is not merely a problem of the individual; the introduction of large national armies into warfare renders mass psychology a problem of ever increasing importance. No officer in command of troops may disregard it; on the contrary, he must study it carefully.

In the evaluation of these various problems, the medical officer can be of greatest service to the commander of troops; and no reasonable and able military commander can afford to dispense with that support. Great and sweeping as the demands may be which the military commander must make upon the unit surgeon in time of peace, they will be even greater in actual combat.

Here, too, the activity of the medical officer is basically and essentially of a prophylactic and psychological nature. The standard of perfection of our medical units, which provides all possible means of affording the combatant soldier the highest type of medical aid, in order to ease his pains and guard him against the effects of an injury, will serve materially to raise the morale of the troops. Furthermore, it will strengthen the confidence of the family of the soldier in the army. The surgeon must shy at no obstacle in his endeavor to reach this goal. The quality of an army is reflected by the standard of its medical department. That was demonstrated in an exemplary fashion by the Japanese in 1905, in the first modern war.

The unit surgeon must concentrate on one thing in making his dispositions, namely, how to reach the wounded quickly with his medical instruments and render first aid. That calls not only for a thorough professional knowledge on the part of the medical officer, but for ability to follow the tactical logic of the military commander with whom he is serving. He may request the military commander to acquaint him with the highlights of his plan of action. That presupposes tactical training on the part of the medical officer. Since the medical elements in the general disposition are placed in rear of the combat units, the most advanced medical elements must be placed so as to be able to move swiftly to any part of the front. That calls for an adequate motorization of the medical units. Provisions must be made for the transportation of medical personnel to the front as well as for the evacuation of wounded. At the front itself or at the collecting station, the medical officer takes care of the wounded and performs urgent surgical functions.

The recent campaign in Poland revealed that a wound might result in utter psychical collapse, besides the initial shock. This is logical. The soldier goes into action while in a state of high psychical and physical tension, as a component part of a large combat team. When he is suddenly wounded and finds himself lying unnoticed in the midst of the fire, with the combat passing over and away from him, a feeling of loneliness and desertion overcomes him—hence the moral and physical shock. Precautions against this phenomenon are also necessary. The mere appearance of the medical soldier or unit soldier has a calming and reviving effect. An important function of the medical personnel at that stage is to ease the pains of the wounded. Yet the highest duty of the surgeon in situations of that kind is to calm the wounded by encouraging words, especially the seriously wounded. Much can be done in that manner to restore and strengthen the fighting power of the unit.

The medical officer is responsible for the evacuation of the wounded from the zone of action and collecting station. Prompt and careful attention to this matter saves the life of many a man. Cases of wounds of the abdomen require timely and proper surgical treatment. Patients with head or chest wounds belong in special hospitals. The patients may be evacuated by air or motor transport. In the case of motor transport, care must be taken that the ambulances are well equipped with springs and shock absorbers. Injuries of the extremities, in particular, require careful fixation and transportation, lest the patient suffer unbearable pain. Many of these matters depend upon the proficiency of the unit surgeon in the front lines. With all due respect to the high scientific standard of our medical profession, it is doubtful that all of our army surgeons possess sufficient training in *military surgery* to meet all requirements of first aid and the application of fixation dressings.

It would not be unreasonable, therefore, to demand that those requirements be taken into consideration in the instruction of the surgeons; and that all medical students be required to take a course in military surgery. This is equally as important as the training of all kinds of specialists.

The foregoing shows briefly the demands which the commander of troops in combat must make upon his medical assistant. No military commander fights a battle for the sake of the brutal assault; on the contrary, he does all within his power to execute his mission with a minimum of casualties. Even then the losses are heavy; and the best medical service cannot banish all suffering from the battlefield. Yet a wise commander of troops heeds the demands of his medical officer, so far as the situation permits, in peace as in war.

The military surgeon, especially the medical officer serving with a large headquarters, has another important, though delicate, mission. It is his duty not only to improve the health of the troops and so the striking power of the army, but to care for the health of the commanders. That imposes the highest demands upon the professional qualifications of the medical officer and, to an even greater degree, upon his human faculties. His task involves the mental as well as physical health of the commanders of all grades. It goes without saying that this calls for the utmost tact on the part of the surgeon—a measure of tact which not every surgeon possesses.

It is hardly necessary to place special emphasis on the importance of this vital problem. Using a single example taken from the Battle of the Marne, I have made an effort to establish factual material concerning the physical and moral integrity of individual commanders. The result of my investigation was by no means pleasant. At any rate, my assertion was clearly proven by the fact that some officers in commanding positions (Hentsch, Bülow, Lauenstein, Moltke jun.) were not physically fit for their jobs. Anybody

will agree with me that cardiac congestion of the liver with hypertrophy of the heart (Moltke jun.), hypertonia with arteriosclerosis and cerebral vascular spasms (Bülow), advanced Basedow's disease based on a lues with luetic aortitis (Lauenstein), repeated acute gallstone attacks, followed by lethal gallbladder perforation (Hentsch), render an officer unfit to command troops. The same holds true of chronic contraction of the kidneys, attacks of angina pectoris and prostata-hypertrophy, for each of which affections I could cite examples and show their repercussions upon the conduct of military and government affairs. That does not mean to say that minor conditions of imperfect health invariably affect the capacity of an officer; yet they might do so in many cases.

The soldier must sacrifice his life, his physical integrity; and the existence and welfare of the nation in war depend upon the military high command. It is just to demand, therefore, a careful and wholly objective supervision of the health of the commanders. There is no argument that those who hold in their hands the destiny of thousands, perhaps millions, of men should prove their physical and moral integrity. It is no disgrace to retire from active service for impairments suffered in the struggle of life. However, it is irresponsible to waste human lives and risk the existence of a nation because of physical and mental defects. Disregard of these principles would be equally as irresponsible as a failure on the part of the responsible leaders to base their preparations for war on the nature of modern war, but to follow instead their own inclinations and personal interests.

The supervision of the health of military commanders requires an extraordinary measure of human understanding, military and professional knowledge, and, above all, character and tact which the military surgeon must possess in order to be competent to voice his views on such matters. Here we have one of the highest missions of the military surgeon—and few are the men who can meet its requirements. Here he is faced with the same task of caring for the health of the nation, family and individual fellowman; yet there enters into consideration in this case a far greater factor, namely, the existence of the state, the health, blood and life of perhaps many soldiers, the cream of the nation.

The demands that the conscientious military commander must and may make upon his medical officer can be met only if the military commander and medical officer are imbued with one and the same conception of the soldier:

"Willingness to assume responsibility, a thorough knowledge of the moral and material nature of war, and constant care of the troops, with the aim of furthering and strengthening the defense of the nation with all available means."

Problems of Infantry Tactics in the Attack

[An article by Colonel Altrichter, German Army, Director, *Kriegsschule*, Dresden. Translated from the German in the Translation Section, Army War College, Washington, D.C.]

The success of the infantry attack depends upon the following factors: The systematic preparation of the attack; the speed of its execution; and its momentum, which must be maintained until the mission is accomplished. These factors are inseparable; in fact, they are mutually dependent. Only a thorough preparation and support of the attack by fire permit the advance to proceed with the necessary lightning-like celerity. This, in turn, saves human lives and so offers the best assurance that the attacking units will retain their power of attack.

A thorough examination of the problems of infantry tactics must emanate from two questions:

(1) What renders the infantry capable of executing the attack with a maximum of speed?

(2) What means serve to lend the attack its momentum up to the successful conclusion?

The demand for a maximum of speed in the execution of the infantry attack may seem incompatible with the World War battles which lasted weeks and months, to mention only the Battle of the Somme, the Battle of Flanders, and the attack on Verdun. All of these battles were doomed to failure because the offensive did not succeed in penetrating quickly enough the hostile defensive system and gaining the freedom necessary to operate in the open before the opponent could reorganize his defense. Realizing this, both the German armies and those of the Allied Powers altered their tactics for the final offensive operations of the World War. A powerful fire concentration of short duration would precede the attack, with the view of shattering the morale of the enemy. The assault then followed suddenly, its aim being to overrun the opponent in a minimum of time. If the attack was supported by tanks, the infantry sometimes actually gained its objective in one single sweep. Conditions were different, however, when the infantry had to attack alone. The assault would be halted again and again by new lines of positions or by strong points checker-boarded through the depth of the hostile zone. In order to be successful, the attack upon each of these new positions had to be prepared anew in detail, and the action of the artillery and infantry had to be carefully coordinated. If the depth of the hostile sector was reinforced by strong points, the attack dissolved itself into a number of separate actions and then progressed by groups. In any case, however, the infantry had to take immediate advantage of the effect of the fire of the friendly artillery and its own heavy weapons or of any weakness displayed by the enemy. Consequently, a maximum of speed in the execution of the individual attacks was required in any case, regardless of the duration of the operation as a whole.

The war of position, with its fortified defensive zones, imposed special conditions upon the great struggle between the nations from 1914 to 1918. In a future war, each side

will do its best to avoid position warfare and to destroy the opponent in a war of movement. Although the battle reveals an endless number of phenomena, and consequently we cannot speak of a standard method of attack, generally speaking we may distinguish between fundamental situations as follows:

Situation No. 1.—Both opponents are marching toward each other, with the intention of attacking each other. Which of the two will gain the superiority once these forces clash? Surely not the side which waits in indecision or delays the attack in an effort to use some unwieldy method, thus missing the most favorable opportunity. The advantages are all with that side which dares to attack boldly into the uncertain. The Field Service Regulations aptly state that success in the meeting engagement will be on that side which anticipates the opponent and deprives him of the initiative. Speed in recognizing the advantages offered by the situation; speed in action, even though the situation may not be clear; and immediate issuance of orders are the essential prerequisites.

Situation No. 2.—Both opponents are in the development at the time of their mutual encounter. While one side attacks immediately, the other withholds its action temporarily after the initial encounter with the enemy. The principles of the infantry attack in this situation are the same as those named for Situation No. 1. An attack executed with speed and determination is the best means of imposing the law of action upon a hesitant opponent. The opponent, as a rule, will be unable to carry out his intentions according to plan, if the attack—to quote a French officer who described the German attack of 1914—"overtakes the opponent like a storm, giving him no chance to gather his wits."

In order to avoid any misconception, however, we must emphasize that the demand for a speedy and powerful attack, under no condition, may be interpreted to mean a blind and reckless plunge into the dark. The problem of the infantry attack is a fire problem; and any attack against a morally sound opponent is doomed to failure unless the attacking forces can gain fire superiority. We shall return to this problem later and discuss it more thoroughly.

Situation No. 3.—After the advance guards have established contact, both opponents take up positions in readiness for the attack. It goes without saying that, in this situation, the superiority rests with the side which exercises the greatest speed in going into position and, by a surprise attack, wipes out the opponent before he can complete his preparations.

The important feature of the three situations cited above is that the irresistible and forceful attack must be carried through to the decision. That is the nucleus of the problem. The high command must exercise foresight in designating the objectives of the offensive; and all subordinate commanders must do likewise within the limits of their possibilities. Any artificial delay of the movement by the commander, be it due to a tendency to be methodical, or for the sake of adhering to a definite plan, or for any other reason, might gravely endanger the success of the attack. Naturally, the variety of situations in war is so unlimited that an attack may be checked prematurely. Both the commander and the troops, in these circumstances, must quickly draw the necessary conclusions from the change in the situation. Any attempt to go on with the attack in the original manner would be an extremely costly and useless process. It is necessary, at this stage of the action, to change the tactics by striking a number of separate blows based on a definite plan, as described in Situations Nos. 4 and 5.

Situation No. 4.—One of the two opponents halts his advance and passes quickly to the defensive. The preparations for the attack, in this situation, must be especially careful. Undue haste in the preparations will cause the attack to miscarry. On the other hand, the attacker must be aware of the fact that any loss of time will be in favor of the defensive and give it time to reinforce its positions. Here, too, speed in the execution of the infantry attack is essential. The infantry should invade the hostile disposition as soon as the friendly artillery has fired its last shell. Hesitation might mean destruction; for the defensive, which has been kept silent by the artillery barrage, is likely to revive as soon as the artillery ceases fire.

Situation No. 5.—The attack is aimed at a line of strongly fortified positions. The tactics, in this case, do not vary essentially from those employed in Situation No. 4.

It is characteristic of both Situations Nos. 4 and 5 that, as a rule, the attack cannot be carried through to the decision in one sweep. The action usually is composed of a series of attacks with limited objectives. It devolves upon the infantry quickly and forcefully to exploit all gains and to shorten the intervals between the separate assaults as much as possible by making all preparations with a maximum of speed. Only thus can the momentum of the attack as a whole be maintained.

The foregoing descriptions indicate that the prerequisite for success in battle consists in *the aggressive spirit, the will to attack, and the power of attack of the infantry.* It is the foremost problem of military education and training in time of peace to further these moral forces with all means available. The most perfect firearms are worthless, unless the infantryman can and will exploit their effect for the attack. The spirit of the assault must be instilled in the soldier. Training must be supplemented by the mental development of the soldier. In modern fighting, the individual must often rely upon his own resources; mere blind obedience is not enough. The void of the battlefield demands independence of thought and action on the part of the individual. It demands soldiers who will intelligently, firmly and boldly exploit every situation, imbued with the conviction that success depends upon every single man. A combat unit can execute its mission successfully only if each individual man understands the intentions of the leader.

All technical progress notwithstanding, the fighting man remains the deciding factor in battle; therefore, the best soldiers belong in the infantry. The standard of its infantry is an unfailing sign of the general strength of a nation in war.

The initiative and independence of the commanders of the smallest units (group leaders) in combat are of vital importance. It is well known that the French Army does

not think much of the "maneuvering" of the small units. We admit that a group* has little occasion to change movements within the narrow space allotted to it in action (not exceeding 100 yards in width). In the main, the attack will develop so that the rifle squads and light machine-gun squads, supporting each other, keep moving straight ahead. Nevertheless the group leader invariably must be assigned a combat mission. However simple his orders may be, he must understand the situation and must be able to make decisions and issue clear orders to his squads. These qualities of the leader must be carefully developed in peacetime training. The best method is to confront the group leader as frequently as possible with situations requiring him to make decisions and issue orders. Thus he will find conditions in war simpler than those to which he has become accustomed in peacetime training. There is no doubt that a leader of a small unit who is schooled in this manner will be a better man and will be able to act with greater speed and precision than one who is suddenly faced by an avalanche of difficulties of which he has not the slightest conception.

The method of issuing orders is another important problem. In war of movement, with its rapid changes in situation, an oral issue of orders based on direct observation of the terrain is preferable to one that is based on the map; likewise, brief fragmentary orders are better than long ones which encompass the entire action. Orders must be issued first to that unit which requires the longest time to prepare for the attack; the unit that can get ready with the least delay must receive its orders last. In the meeting engagement, the regiment is the smallest unit whose commanding officer issues written orders based on the map. Battalion commanders, not to mention company and platoon commanders, normally issue oral orders based directly on the terrain. This speed and flexibility in issuing orders constitutes one of the greatest advantages of the German method of command; care must be taken to preserve this advantage. Commanding officers, down to the company commander, issue written orders only if time permits, that is, in the case of a carefully regulated plan of attack and fire, the details of which are to be executed at definitely prescribed times.

The speed of the attack depends largely upon the *mobility of the individual infantry soldier.* In order to raise this mobility to a maximum degree, the soldier must be relieved of all superfluous weight; his clothing, equipment and armament must be as light and comfortable as possible. The rifleman with a heavy pack is out of place in modern combat which mposes the highest demands upon his physical activity. His appearance is definitely a thing of the past.

We have already mentioned that, according to the German concept, the attack problems of the infantry are *fire problems.* Infantry reorganization has gradually led to the replacement of the pure infantry units of former times by mixed units. A comparison of the organization of a modern infantry regiment, battalion or company with that of 1914 clearly reveals the course taken by this development. It is doubtful whether the development is final, for there are still a number of problems to be solved.

This includes the question of *the organic assignment of an artillery battalion to the infantry regiment.* While an organization of this kind may be objectionable from a standpoint of training, tactical considerations make it advisable. At the present, the infantry regiment usually must rely upon teamwork with a battalion of artillery. This condition is not quite satisfactory, however, for the artillery battalion, regardless of how closely it cooperates with the infantry, remains under the orders of the artillery commander. The latter might, at any time, assign missions to the battalion which are contrary to the wishes of the infantry commander. This danger is especially serious, if the artillery commander is a very determined type of man and the division artillery as a whole is weak. All of these difficulties could be eliminated by the organic assignment of an artillery battalion to the infantry regiment. This solution is recommended also for psychological reasons. In passing, we may mention that the organic assignment of artillery battalions must not be made at the expense of the division artillery.

It would be a mistake to regard *the heavy weapons company of the infantry regiment* as a type of artillery. The heavy weapons company neither carries out artillery missions, nor is it conducted according to artillery principles. The commanding officer of the heavy weapons company at no time exercises the technical conduct of the fire of his guns in the sense of the battery commander. Instead he assigns missions to the platoon commanders; and they are responsible for the execution of their missions, that is, they reconnoiter the observation posts, gun emplacements and location of the targets, order the employment of the platoons and conduct the fire. Even though several platoons of the heavy weapons company may be employed under the direction of the company commander, the gun positions of the several platoons are invariably separated as to space.

Experience has proved that the infantry battalion cannot dispense with high-angle firearms in the execution of an attack. It is for this reason that heavy weapons platoons normally are attached to the battalions for the attack. Using indirect aiming methods, the heavy weapons fire upon targets within the hostile infantry zone that are out of reach of the machine guns and mortars, and which the artillery cannot see or reach because of the great dispersion of its fire. The targets in question usually are entrenched or otherwise well concealed; only observed fire can be effective in their case. The regimental commander may employ elements of the heavy weapons company, not attached to the battalions in the front line, to reinforce the fire at the point of main effort. In view of the fact that the infantry battalion absolutely needs the high-angle fire of the heavy weapons for the attack, we may pose the question whether it might be more advisable organically to assign a platoon of heavy weapons to each battalion of infantry. This solution would be automatically in order, if the infantry regiment were reinforced organically by a battalion of artillery.

Quite different from the employment of the heavy weapons company is that of *the antitank company of the infantry regiment.* A distribution of the antitank company by platoons among the battalions for the attack would result in a dissipation of its effect. The regimental commander must employ the antitank company where a hostile tank attack is most likely to occur or is most dangerous. Owing to their

Translator's Note: The "Gruppe" is the smallest tactical unit of the German rifle company. It consists of the group leader; the squad leader (second in command); the rifle squad (seven men, not counting the squad leader); and the light machine-gun squad (four men, one light machine gun).—*Deutsche Wehrsprache, 1939,* Glodkowski.

short range, the antitank guns can accomplish their task only by following closely behind the forward elements of the regiment. The company commander must be adept in the employment of his platoons, for the platoon commanders can meet the requirements of the ever-changing terrain and act independently in the sense of the whole only if the company commander assigns them far-sighted missions. A diligent exploitation of the terrain is of vital importance to the antitank platoons. Lack of precaution in the employment of the antitank guns is bound to be fatal, for they present targets of considerable size when operating in the forward zone of the infantry. Antitank platoons are placed under the orders of the lower commanders within the regiment only when they form a part of a security detachment for a bivouac area, when they are on outpost or with the advance guard, in delaying action, and in pursuit. The antitank guns use only direct laying. The gun opens fire only on oral or visual orders of the platoon commander. Once the platoon commander has given orders to open fire, each gun, within its respective sector of fire, conducts the fire independently as the gun commander directs. This is absolutely necessary because of the high rate of speed involved if the targets are tanks.

The organic assignment of a *company of engineers* to the infantry regiment is a moot question. While the experience of the World War in this respect is derived largely from the war of position, it speaks in favor of the organization of such a company. In war of movement, the need of an organic engineer company is less essential. However, it would be a mistake to conclude from this that the pioneer squads of the rifle companies can take the place of the company of engineers. To detach the pioneer squads from their companies and combine them for the purpose of using them as combat engineers would mean to impair the power of attack of the rifle companies. Besides, the engineer squads as such will probably disappear with the first major losses in action.

The last 300 yards in front of the enemy have always been a great obstacle for the attacking infantry. Considerable progress toward the solution of this problem has been made by the assignment of heavy and light mortars to the battalions and rifle companies. Combat at close range does not permit support of artillery and heavy weapons. The rifle companies must rely upon their own resources in that case. In the days when the rifle companies had no organic high-angle firearms at their disposal and the opponent was of sound morale, well concealed and entrenched, their task often was well-nigh impracticable. The introduction of heavy and light mortars brought about the first change in this respect. With the mortars pinning down the enemy, the companies in the front line now can worm their way forward to a line from which they may take the hostile defenses by assault. The assignment of mortars to the infantry is of inestimable importance.

The assignment of heavy machine-gun sections to the rifle companies is of equal importance, however. Its twofold advantage is that the company commanders may use these machine-gun sections for fire concentrations; and that the battalion commander is not required to attach heavy machine guns of the machine-gun company to the rifle companies for that purpose. It is the function of the heavy machine-gun section of the rifle company to supplement the fire of the light machine guns at longer ranges and to fire on targets that are immune to the fire of the light machine guns. Using only direct laying, these heavy machine guns must operate far forward and maintain close contact with the advanced elements of the company. This is especially essential just prior to the invasion of the hostile disposition. On the other hand, we admit that the assignment of a heavy machine-gun section and light mortars to the rifle company (heavy mortars are also placed under the orders of the company commander in action) renders the training and command of the rifle company more difficult. Yet it would be wrong to overestimate the difficulties and come to the conclusion that these weapons should be taken away from the rifle company.

Equally mistaken is the view that the assignment of heavy machine-gun sections to the rifle companies has rendered the machine-gun company of the battalion superfluous, and that one regimental machine-gun company is sufficient. This would involve a fatal debilitation of the fighting power of the battalion. The battalion commander must be in a position to call on his own machine-gun company for the purpose of organizing a fire concentration at the point of main effort. If only one regimental machine-gun company were available for that purpose, one may rest assured that it would invariably reach the proper place too late.

The fire action is based on the systematic regulation of the fire of all arms. Careful teamwork between the light and heavy weapons of the infantry is essential for any advance. High-angle and flat-trajectory fire must be closely coordinated. While the heavy weapons and mortars of the infantry contain the enemy as long as he is behind or under cover, the light and heavy machine guns open fire when the enemy shows himself in the open. The hand grenade serves to wipe out the last vestiges of resistance.

If the attack is directed against an enemy in defensive positions, the battalion commander must regulate the activity of the weapons under his command by means of a fire plan, in which time and place of the fire are fixed in detail. The fire plan then must be coordinated with the combat missions of the artillery. It must cover not only the advanced positions of the enemy, but must extend into the depth of the hostile defensive zone. The limits of the fire plan are prescribed normally by the field of observation that is open to the various types of weapons. If the attack is made by bounds, that is, from one objective to another, the primary function of the battalion commander consists of renewing the fire plan and putting it into effect prior to each advance.

The high rate of fire of modern weapons, combined with the limited supply of ammunition available in mobile warfare, does not permit prolonged fire actions. Therefore, *closest concentration of fire*, both as to time and space, *is characteristic of modern fire tactics.* The more sudden the hurricane which is loosed by the guns and the less prepared the opponent is for it, the greater the moral and material success will be. The element of surprise is a decisive factor in gaining fire superiority. In practice, the realization of this fact causes surprise fire to be delivered whenever possible. The demand for achieving surprise effect does not confine itself to artillery fire, but applies also to the heavy and light weapons of the infantry, down to the rifle.

It would be contrary to modern infantry tactics to have the riflemen open fire at long ranges, with the idea of gaining

fire superiority by slow and well-aimed rifle fire. The struggle for fire superiority must be fought by the automatic weapons. Covered by them, the rifleman works his way forward to the opponent. The question arises: When shall he open fire? There can be only one answer: As late as possible. Normally, the rifle squads open fire at close range; and then only if absolutely necessary for further progress. It would be ideal if the protective fire of the heavy weapons and the artillery were so greatly superior that it would permit the rifleman to close in on his opponent without firing a shot. This is hardly feasible in practice, however. The riflemen as a body participate in the fire action only shortly before their invasion of the hostile positions, when the reserves are closing in for the assault; then they cover the enemy with well-aimed rapid fire, in order to break completely his will to resist.

The rifle squad and the individual rifleman, when taking part in the fire action, preferably should fire from cover and aim at surprise effect. Making all of their preparations under cover, the riflemen must bob up and quickly deliver their fire; the squad leader may order the number of rounds to be fired. The calm fire action with the rifle is a thing of the past. With it has disappeared the old teamwork between riflemen: "You fire, while I observe." The modern rifleman must be trained systematically in rapid fire. Whenever he is not firing or crawling forward, he must take full cover. At no time must he remain in a position where he presents a target to the enemy.

The light machine-gun squad follows the same principles in opening fire. Here, too, the question arises when to open fire. Like the rifle squad, the light machine-gun squad opens fire at the latest possible moment, that is, only when the rifle squad needs the protective fire of the light machine gun or an unusually favorable opportunity presents itself (flanking fire). The teamwork between the light machine-gun squad and the rifle squad presents a difficult problem, if the two squads have become separated by a considerable distance in the course of the attack. Although all kinds of exaggerations in this respect may be observed in peacetime exercises, in war the question of the greatest distance permissible between two squads usually resolves itself. The light machine gun being limited to fire between gaps, its distance to the rear must be smaller than the gap is wide; otherwise its fire will endanger the men of the rifle squad. Likewise, the necessity of combining the two squads under one command imposes great limitations upon the interval between them. The maximum interval between the rifle squad and the light machine-gun squad in a fire action may be assumed as not exceeding 90 yards; although it may be increased at times on open ground without cover.

In contrast to the French concept, the German Regulations oppose all systematic procedure and rigidity in infantry combat. The French Regulations prescribe for the platoon, company and battalion a number of different formations to be employed under given tactical conditions. Formations other than those prescribed by the regulations are banned. True, it is easy to learn tactics with the aid of such a scheme, especially as regards the training of reserve officers in methods of command. This can be dangerous, however, for combat involves an endless variety of situations, and the art of leading troops, down to the group, consists in recognizing the true situation in each instance and in issuing the most appropriate orders. In appreciation of that fact, the German Regulations avoid imposing the fetters of rigid form upon the leaders. It is characteristic of the German Regulations that they teach, above all, principles, conceptions and directions, which the leader must convert into action according to the circumstances. There is no doubt that this procedure makes the highest demands upon the intelligence, will power and sense of responsibility of the leaders. These requirements are deliberately high in order to develop a body of leaders whose mentality and capacity is of the highest standard.

The Infantry Training Regulations teach but few formations with numerical limitations. There are the "platoon wedge" (platoon in echelon; one group in front, the other two in the right and left rear at 100 yards distance) and the "platoon broad wedge" (platoon in inverted echelon; two groups in front, interval 100 yards; third group in center rear, distance 100 yards). The company uses the "company wedge" and the "company broad wedge" similar to the corresponding platoon formations but with intervals and distances of 150 yards. However, platoon and company commanders are by no means bound to adhere to these formations. Their purpose is solely to accelerate the deployment. The Infantry Training Regulations give no maximum or minimum widths of the zones to be occupied by the groups, platoons and companies in the attack. The regulations prescribe no formation whatever for the battalion. Only one figure is given, and that with reference to the breadth of the battalion zone in the attack, namely, between 400 and 1,000 yards. There are neither formations nor figures for the organization of the regiment in the attack.

Soldiers of other nations might be surprised at this freedom which the German Regulations grant the leaders in the selection of means and methods in the attack; and they might find it difficult to understand. Recent experiences indicate, however, that this freedom of action has stood the test of battle with most satisfactory results.

Italian Views on Mountain Warfare

[Resumé of an article by General Valentine Bobio, Italian Army, in *Voyenny Zarubezhnik*, April 1940. Translated from the Russian in the Translation Section, the Army War College, Washington, D.C.]

In view of the mountainous nature of Italy "all Italian soldiers must be trained in mountain warfare." With this in mind, General Bobio presents the following thoughts on the employment of the various arms of the service in mountainous terrain.

Infantry and tanks.—The effective employment of troops in mountainous terrain is possible only by the flexible and mobile infantry, which always maintains with it all of its fire weapons and supply elements. This requirement imposes special demands on the equipment and armament of the

infantry soldier. Even the heavy machine gun is regarded as too heavy a weapon. "The infantry organization," says General Bobio, "must not be based on the employment of heavy machine guns, those heavy consumers of much ammunition, calling for regular supply, and which are entirely inadaptable to swift changes in position." For action in mountains the quality of weapons used always assumes more importance than the quantity involved. Thus, in mountainous terrain it is best to utilize individual weapons that are lighter than the light machine gun; the prospects of the automatic rifle loom large here.

As regards tanks, the employment of these will be limited to occasional actions, which under favorable conditions, will occur in suitable sectors with ample roads.

Artillery.—Ease and speed in the changing of positions of artillery assume more importance than fire power. Nevertheless, we cannot overlook entirely the power of artillery, considering the fact that it is the power of the artillery which justifies its existence. It must be capable of taking up positions in any sector, from which it may perform its missions. "As regards fire positions," the author adds, "in mountainous terrain these can be selected better than is generally assumed," excepting of course, lofty mountain areas where only the 81-mm mortar may perform the missions devolving upon accompanying weapons.

Cavalry.—Though generally not employed in mountain warfare, the cavalry finds in General Bobio an ardent supporter. The author personally witnessed a cavalry squadron covering a route in winter that was regarded as impassable for the infantry. He believes that cavalry is suitable for the performance of vital missions, such, for example, as the timely occupation of vitally important points or important areas. Furthermore, animal-drawn transport equipment may be replaced by pack animals whenever necessary.

Engineer and Communication Troops.—In mountains use will be made first of all of road and communication units. Engineer units will also be utilized on large-scale fortification works. The functions of communication units in mountains are more complicated than in any other terrain. In the establishment of wire communications a thick net has to be provided that is difficult to lay down in view of the nature of the terrain and the splitting up of organizations. Sound ranging equipment utilized for communication purposes is quite effective in calm areas, but these will produce mistakes and create confusion in areas close to the enemy. Principal dependence must be placed in visual and radio communication.

At the present time the radio constitutes one of the best means of communication, notwithstanding the fact that conditions in mountains reduce the radius of action of the same.

Furthermore, use is also made of orderlies and messengers. Sight must not be lost of the fact that in mountains a mounted man is more useful than a man on a bicycle; of utmost importance in mountainous terrain is the high morale of the troops, providing the coordination of initiative and energy. The commanders of all echelons must have a thorough understanding of the fact that "in mountains one is working not for himself, but for others."

The offensive.—In mountainous terrain surprise predominates. This is due to many reasons: the nature of the terrain, the dispersion of units, difficulties involved in communications and supply. Surprise, consequently, is the rule. The commander merely issues brief orders, simple directives, affording each and every one the opportunity to exercise his personal initiative. The skill of the commander consists in the direction of scattered efforts toward the accomplishment of the general objective.

Mountain warfare involves yet another feature: great width of the front and minimum depth in the disposition of the forces. The width of the front, depending as always on the feasibility of the utilization of fire in mountains may be extended to those advantages afforded by mountainous terrain. The limited depth in the echeloning of the troops is explained also by the nature of the terrain that complicates the disposition of support and reserve elements. These same conditions, however, permit the concentration in narrow sectors of greater forces, providing them with cover against hostile observation and fire.

The attack in mountains is more protracted and difficult than in field situations during the "preparatory phase," and conversely, more brief during the "effective phase." Surprise action must always be expected from the enemy, reconnaissance missions being most difficult, and consequently, every effort must be made to discover the enemy intentions and to be in readiness to repel any surprise attacks.

As soon as a decision has been arrived at, it must be executed promptly to the end that it may be accomplished with a single stroke. An unsuccessful action in mountains always ends in defeat: "When one retreats in mountains, there is no telling where he is going to stop."

Reconnaissance, at least in high mountain areas and in difficult sectors, may be entrusted only to specialized troops. This is accomplished in two echlons: by a reconnaissance echelon and by a covering echelon.

Where the distances between the reconnaissance and covering echelons becomes too great, these must be reduced by the echeloning of elements between these to the end that the various elements comprising these may be able to afford mutual support. As regards covering units, these will also be further separated from the main force and of lesser strength than is the case in level terrain.

It should be noted that flanking attacks are more effective than frontal attacks. Under the circumstances, flanking units become advance guard units: attacks are made against the flank in order to gain ground frontally. In adopting flanking movements, attacks should be made on a wide front in order that utmost use may be made of all passes, trails, etc., leading toward the selected objective.

The defensive.—The very nature of mountainous terrain is such as to facilitate defense. First of all, plans must be made for the "establishment of barriers" on roads affording approaches for the enemy; though it would be a great error to devote all of one's energy to the selection of means for an immobile defense only. Mountains, permitting the holding of large sectors with small forces, at the same time permit the designation of larger reserves for utilization in offensive movements. Movements of this nature must be met by counter-movements, and strong reserves must be maintained for the purpose. Any one intending to take up

powerful positions in mountains with the object of merely maintaining these with stationary forces is doomed to failure. Let us note, furthermore, that maneuver may be utilized for the purpose of leading the attacker into terrain that favors the launching of counterattacks.

To the above we may add that encounters with weak forces will tend to embolden an attacker, while unoccupied sectors of a battlefield will cause him to be wary and suspicious.

If in case of the attack it is advantageous to "spread out over a wide front," utilizing all available approaches, then in the case of the defense, on the other hand, it is advantageous to concentrate available forces at important sectors of the front. The disposition of security forces in mountains differs from that in field operations. Here this involves less forces and fewer echelons. Insufficient depth of defensive positions constitutes the weakest spot of the defensive in mountains. It becomes necessary to defend only isolated important points from which units may affort mutual support to one another; these points should be at lesser intervals from one another than in the case of flat terrain. The moment that these important points are lost there is nothing more left. The defense should at once be shifted to other positions.

It may be well to add that in mountainous terrain security zones cannot be established in advance of defense positions. The most that can be accomplished is the occupation before the position of several particularly favorable points situated in advance of the position for observation or defense purposes.

Rivers, Lakes and Marshes and their Influence Upon Winter Operations

[From an article by First Lieutenant Ponath, in *Militär-Wochenblatt*, 11 and 18 January 1929. Translated from the German in the Translation Section, the Army War College, Washington, D.C.]

In making preparations for war, it is of vital importance to study and form a correct estimate of the nature of the terrain in which the military operations are to be conducted. Failure to consider such geographical features as rivers, lakes and marshes might cause disaster or, to say the least, interfere greatly with the execution of the strategic operations. Military technique has made sufficient progress to meet any obstacle which confronts the combat forces in the operations zone. In the winter, however, water barriers have a varying effect upon military operations.

Troops may cross frozen waters, provided the ice is thick enough to support the load. On the other hand, troops crossing an icebound body of water are without cover and present a plainly visible target; besides, ice is easily broken up by mines or artillery fire. In the presence of the enemy perils such as these must be taken into consideration. The ice constitutes an unobstructed plane; and a handful of machine guns may suffice to ward off an attack across it. At night, the defensive must increase its security measures. Although nights are not very dark as long as there is snow on the ground, wooded banks may conceal the approach of an attacker. In crossing large bodies of ice, means of orientation must be provided.

While ice has little value as an obstacle, it may serve as a sort of glacis in front of the defensive position. The requisite thickness of ice on rivers and lakes may be estimated as follows:

To support individual foot soldiers	3 inches
To support infantry marching in open ranks and individual mounted men	4 inches
To support infantry in column and cavalry	6 inches
To support light guns and vehicles	8 inches
To support heavy guns	12 inches

Historical Examples

Rivers

In operations involving the crossing of wide rivers, the weather forecast must invariably be consulted in order to guard against sudden thaws or freezings. Drift ice is an obstacle which is difficult to overcome.

In the winter of 1778, General von Stutterheim, commanding the East and West Prussian units, received orders from the King to rush his troops across the Vistula and march to the County of Glatz. The transfer of the troops across the river met with tremendous difficulties, due to the fact that the Vistula was carrying drift ice; a number of boats were lost.

In the winter of 1795, Prussian units were in winter quarters located on the east bank of the Rhine; French forces were on the other side of the river. The Rhine froze that year, and the ice was thick enough to permit a crossing of the river at any point. It was necessary, therefore, to increase the security measures all along the river in order to forestall a French attack at points other than the bridges.

Early in December 1808, the remnants of the Prussian Army, concentrated under the command of General l'Estocq, and the garrisons of the eastern provinces evacuated the east bank of the Vistula before the advance of the French Army. Since the Vistula was still free of ice, minor elements would have sufficed to delay, if not entirely prevent, any attempt on the part of the French forces to cross the river. The French made ready to effect a crossing without encountering any interference. However, drift ice appeared on the river while the French were still engaged in the construction of a bridge. This change in the situation seriously hampered the work of the engineers; a small force of defenders could have rendered the French situation most difficult. No opposition being offered, however, seven French

corps crossed to the right bank of the Vistula by 23 December. It may be noted that it was assumed at the time that the Vistula would freeze solidly around the middle or end of December and the ice remain in place for two or three months.

The withdrawal of the French Army from Smolensk, mid-November 1812, was executed by echelons. The individual corps received instructions to march on Krassny, with a day's march between corps. Kutosov's plan to block the retreat of Napoleon at Krassny led to the engagements of 15-18 November between the Russian forces and the individual French echelons. Marshal Ney's corps was the last echelon; it clashed with the enemy at a point east of Krassny. Although a surprise attack by Ney's corps brought initial gains, the strength of the opponent proved to be superior in the end. Refusing an ultimatum to capitulate, Marshal Ney at first led his corps back in the direction of Smolensk, for the purpose of deceiving the enemy. As soon as it became dark, he changed direction, marched cross-country to the Dnieper, and crossed the ice which was barely strong enough to support foot troops. The French carried out the withdrawal successfully, despite the fact that other hostile forces meanwhile had taken up the advance from Smolensk along the north bank of the river. However, the ice not being thick enough, the withdrawing units had to leave behind all of their horses and vehicles.

At about the same time, the Prussian contingents of Generals von Grawert and von York—which, in conformity with the alliance pact, had been placed at the disposal of the French X Corps (MacDonald)—were located in Courland, along the Missa, Eckau and Aa rivers. They had been there since October 1812, with the mission of guarding the communications and north flank of the French Army. It was known that Napoleon had left Moscow 18 October 1812; and that Wittgenstein had penetrated across the Dvina. Thus Wittgenstein was occupying a position in the rear of Napoleon. The Aa was still open on 13 November. The next night the temperature dropped to zero (F.), and the following morning the ice was thick on all waters. This changed the situation entirely. Russian troops crossed the ice of the Dvina, between Friedrichstadt and Riga, took some of the elements which had been advanced to that line by surprise and drove them back. The ensuing counteroperation, which was launched with the idea of preventing the Russian forces from reaching the western course of the Dvina, failed because the frozen Dvina no longer constituted a boundary, but permitted the opponent to cross at any point.

In the early days of February 1831, Marshal Diebitsch with six Russian corps, two of which were cavalry corps, occupied a broad front in the area east of the Niemen and Bug, ready to march into Poland. The Polish Army, under the command of Duke Radziwill, was concentrated in the fortress triangle of Warsaw—Modlin—Serozk. Operating on interior lines, the Polish forces here were in a position to face a simultaneous attack from several different directions with superior numbers, on either bank of the Vistula, Bug or Narew, and as quickly to retire to the safety of the fortifications behind the rivers. The winter was severe at the time, with temperatures down to four degrees (F.) below zero. All rivers and marshes were frozen. Taking advantage of the weather, Marshal Diebitsch decided to make a concentric advance, with the main body pushing ahead through the area between the Narew and Bug and a part of his forces advancing through the region south of the Bug. His aim was to concentrate his forces at Warsaw for the decisive blow. The Russian columns moved into Poland 6 February; the cold was severe. The next day it suddenly began to thaw, completely upsetting the Russian plan. Diebitsch saw himself compelled to abandon the plan of advancing through the area between the Bug and Narew, for the thaw had turned the terrain into an impenetrable marsh. He directed his army onto the Brest-Litovsk—Biala—Siedlce highway, intending to cross the Bug at Nur and Brog. However, the ice broke as early as 14 February, despite the fact that it had been reinforced with planks and straw. The Russian troops had to build a ponton bridge, which was a difficult task under the circumstances. They did not reach the fortifications of Praga until 25 February, after first fighting the Battle of Grochow. After several attacks, the Polish forces retired through Praga and crossed the ice of the Vistula into Warsaw. The Russians did not dare to follow across the river. A few days later the ice on the river began to thaw, and fifteen days of drift ice precluded a crossing of any kind.

In the engagements of the winter of 1848-1849 in Hungary, the Imperial Corps, under General Nugent, received the mission to advance simultaneously with the main drive from Styria and encircle the fortress of Esseg, near the confluence of the Drau and Danube. The main channel of the Drau was frozen, but the ice was only strong enough to carry individual persons. At the point of crossing near Pali, a fist-high layer of straw was placed on the ice, water was poured on the straw, and planks laid on top. Infantry, dismounted cavalry, guns and vehicles, the latter spaced at 50 yards, crossed the ice without mishap.

The last two examples go to show that ice may be reinforced by layers of straw, manure, brush or planks bedded on straw, or, for the purpose of transferring vehicles, by laying planks along the tracks of the wheels.

In January 1905 the Russian and Japanese armies on the Shaho, south of Mukden, had been in a stalemate since the preceding October. The Russian commander finally decided to employ his superior cavalry for an attack upon the Japanese lines of communication, most important of which was the railroad connecting Kaitchou with Dashitsao, Haitchoen and Liao-yang. In the execution of this large-scale raid, a composite cavalry corps, commanded by General Mishchenko, broke camp 10 January and, passing round the western flank of the Japanese Second Army, rode down the left bank of the Liaoho. Normally, the terrain would have been unfavorable for such an undertaking, because of the bad roads and numerous streams (Liaoho, Hunho, Taitsucho). However, all waters were frozen, and the ice was thick enough for cavalry and artillery to cross.

Near Kiliho, strong bands of Chungus occupied the east bank of the Hunho. Crossing the ice in these circumstances was most difficult. The opponent gave way only after heavy and costly fighting. On 11 January the Russian cavalry corps crossed the Taitsucho at Kaolifang under like conditions. Instead of taking the shortest route to Haitschoen and executing its mission there along the railroad, the corps rode on in the direction of Inkou. The slow progress caused the

Russian cavalry to be overtaken and driven back by Japanese reinforcements that had been rushed up. The raid was a failure.

On 13 January the cavalry corps took up the withdrawal, crossed the ice of the Liaoho at Toberun, and rejoined the western flank of the Russian forces on the 17th.

The weather in this case favored the promising operation; with more energetic leadership it could have produced far-reaching results.

The Battle of Sandepu, 25-29 January 1905.—The Russian Second Army, occupying a position on the right flank of the Russian armies, had orders to execute a carefully planned envelopment of the western flank of the Japanese forces between Hunho and Shanho, roll up that flank, and turn on the Japanese main forces east of the Shanho. Meanwhile, the Russian Third and First Armies, which joined the Second on the east, were to hold their lines against an anticipated counterattack. The offensive was scheduled to get underway 25 January. The weather was extremely cold at the time. The Hunho was frozen fast, and the ice was strong enough to carry all arms. The corps on the right flank (I Corps) was designated to cross the ice of the Hunho and attack the fortified village of Hukentai. The VIII and X Corps confined themselves, however, to the occupation of Hukentai and to waiting for the enveloping meneuver of the I Corps to take effect. This was an unremediable mistake. The small Japanese elements in and around Hukentai were able to contain the Russian enveloping force until reserves moved up and launched a counterattack. Thus a general attack by the Russian First Army clashed with strong hostile forces as early as 28 January; the attack was not successful. Two and a half Japanese divisions counterattacked on the 29th, repulsed the Russian I Corps across the ice of the Hunho, and, by advancing in the direction of Chanteau, caused the withdrawal of the remainder of the Russian First Army to its line of departure. Considering that the river was frozen and constituted no obstacle, an enveloping attack directed in depth at the Japanese flank, would have been more promising, but would have required a simultaneous and forceful attack in front.

Late in the summer and fall of 1915, the German forces succeeded, after bitter fighting, in repulsing far superior Russian forces across the Styr and Strumen. In the second half of October the operations on that front passed to trench warfare. No German replacements had reached the front for a long time; the effective strengths were extremely low; the frontages excessively wide. The Russians were conducting guerrilla warfare and had carried out successfully a number of raids on strong points. When the German units were brought up to strength, they too, resorted to guerrilla warfare. Among others, German elements attempted a raid on Gorowaclica, a village located behind a wide river. The plan for the raid was based on crossing the river, although the ice had just formed and was not considered safe for crossing. The raiding party succeeded in getting across the ice, but lost two men by drowning. Upon reaching the other side of the village, the raiding party was observed by Russian outposts and the raid had to be broken off.

The noteworthy part of this example is that crossing a body of frozen water after a light frost makes greatly for surprise effect, if the opponent does not believe the ice strong enough for crossing. On the other hand, the sound of breaking ice will reveal even the approach of individual men. German elements successfully carried out a similar raid on hostile outposts January 1915, when they crossed the frozen Rawka at Rawa-Stare.

Lakes and Large Bodies of Water

The Winter Campaign of the Grand Elector against Sweden, 1678-1679.—Upon receipt of the news that the Grand Elector had arrived on the east bank of the Vistula, 20 January 1679, the Swedes abandoned their winter quarters in the region of Friedberg and Bartenstein and took up the withdrawal in the direction of Insterburg. The Elector immediately launched an outflanking pursuit. Loading his troops on 1,100 sleds, he took the shortest route to Koenigsberg, necessitating a crossing of the Frische Haff. Arriving in Koenigsberg, he learned that the Swedes had continued their retreat on Tilsit. The Elector decided to outflank the Swedes and block their further withdrawal by occupying the line of the Memel river. He chose the direct route across the Kurische Haff and reached Tilsit simultaneously with advanced elements of the army. The success of this remarkable operation was due to an exact knowledge of the local ice conditions as well as to the determined nature of the Elector. Only by exploiting the fact that troops could march across the frozen Haff was it possible to carry out such a bold plan of an outflanking pursuit and take the enemy by surprise, for he had not believed that an operation of this kind was feasible. While the pursuing forces did not establish contact with the retreating Swedish troops, the ceaseless pursuit led to the complete dissolution of the latter.

During the winter of 1675-1676, the Swedes were occupying the island of Usedom and the fortress of Wolgast. The Grand Elector decided to employ the forces stationed on the island of Wollin for the recapture of Usedom and Wolgast. In the execution of that mission, General von Schwerin, accompanied by 2,000 men and 15 guns, left the island of Wollin on 17 January, marched across the ice of the Grosse and Kleine Haff to the south shore of the island of Usedom, with the aim of outflanking the hostile outposts that were stationed along the Swine. Executed with great speed, this flanking maneuver took the enemy by surprise. The Swedish troops on Usedom retreated in haste across the ice to Wolgast. Their rear guard was wiped out.

After driving the Swedish forces from Wolgast, Danish and Brandenburg units crossed the ice on 31 January and advanced on the island of Ruegen; their intention was to repulse the Swedes from that island while the weather was still favorable. However, the Swedes were prepared; they had broken up the ice along the shore line. This made it impossible to approach the island. Meanwhile it had begun to thaw, and the attacking forces had to take up the withdrawal with considerable losses.

In December 1757, Frederic the Great decided to drive the Swedes out of Pomerania. He entrusted this mission to Marshal Lehwaldt. The Swedes retired to the island of Ruegen. The severe frost caused the channel between Ruegen and Pomerania to freeze. Marshal Lehwaldt took advan-

tage of the opportunity and marched his army across the ice to Ruegen, where he destroyed the Swedes completely.

In the Russo-Japanese War, the Siberian railroad was the only main line available for the concentration of the Russian forces. At the time of the mobilization against Japan, that railroad was still interrupted by Lake Baikal; the tracks around the southern point of the lake had not been completed. In order to accomplish the concentration, it was necessary to cross Lake Baikal, for the distance around the lake was too great (400 miles). At first a combination of ice breaker and ferry was procured to carry the troops across the lake which was between 20 and 50 miles wide. Normally, by the end of November the lake is frozen so solidly that an ice breaker is of no avail, and the ice does not thaw until April. Thus, at the time of its mobilization and concentration against Japan, Russia had to fight against tremendous obstacles. The High Command had no choice but to lay rails across the ice and procure sleds for the transportation of troops and matériel across the ice of the lake. The greater part of the troops covered the distance on foot, however.

In the operations of the winter of 1914, on the Masurian Lakes, the channel connecting Lakes Dargeinen and Mauer froze solidly on 23 November 1914. This gave the Russians an opportunity to drive from the east bank of the lakes, that is, from the vicinity of Possessern, across Lake Kirsaiten, to Gr.-Steinort near Loetzen and Angerburg. The Commandant of Loetzen issued orders, therefore, to break a channel through the ice of Lake Kirsaiten, using for that purpose the steamer *Ernst*, a small vessel which was fitted provisionally with armor plate. However, the steamer was too weak to force its way through the three inches of ice which covered the lake. It was not until 29 January, by which time the ice had increased to a thickness of four inches, that the ice was blasted by means of bottles filled with powder. An attempt to melt the ice with cattle salt was unsuccessful. The steamer had to make frequent trips up and down the channel in order to keep it open; salt was strewn on the ice to widen the channel gradually.

The steamer *Ernst* was used later successfully for reconnaissances on Lake Spirding against the Russian positions in the region south and north of the lake. The trips had to be discontinued when that lake, too, was covered with thick ice 2 January 1915. The steamer next was assigned the task of keeping open a channel through Lake Beldahn, in order to prevent the enemy from crossing from the eastern to the western shore of the lake. For the time being, Lake Beldahn was frozen only in places where there was no wind; there the vessel opened a 20 to 25-foot channel and kept it from freezing by making frequent trips up and down the channel. By 5 January, the entire lake was frozen. After several attempts to break the ice, the quickest and most effective results were gained by the boat crew who, with the assistance of engineer soldiers, used hammers and axes to cut a narrow gap through the ice. The steamer pressed through the opening and succeeded in breaking the ice which was four inches thick. However, the temperature dropped so low that an inch of ice would form on the water shortly after the steamer had passed, and the ice floes would freeze together. The task had to be abandoned 21 January.

The Battle of Lake Narotsch, Spring of 1916.—On the front between Lakes Wischniew and Narotsch, the 75th Reserve Division occupied its reinforced positions, ready to meet the offensive which the Russian forces had launched on 18 March. General Ragosa, who was in charge of the Russian spring offensive, intended to clear the narrow strips of land between Lakes Miastra, Narotsch and Wischniew, for the purpose of advancing on his objective, the city of Vilna. In so doing, he planned to take advantage of the weather, that is, the ice on the lakes. Besides a number of other harbingers of the ensuing offensive, a daring raiding party, comprising two young Cossack officers and 32 men, rode across the frozen Lake Narotsch during the stormy and bitterly cold night of 27-28 February. The objective of this cavalry raid was to gain the line of communications of the German Tenth Army and interfere with its supply of ammunition and provisions, by destroying bridges and railroads. The German troops discovered the tracks of the Russians. Entire units were ordered out to capture the enemy, but could not prevent the destruction of several bridges in the communications zone. Headquarters XXI Corps, which was located at Kobylnik, had an uneasy time. The Cossacks had released their horses shortly after reaching the German lines and proceeded to wreak havoc dressed in civilian clothes. It took several days to capture the daring men one by one.

It began to thaw 16 March. Apparently the enemy had not counted on that possibility. As the thaw continued, the Russian units found it impossible to advance across the ice of the lakes. Confined to the narrows between the lakes, which were easy to defend, the attacking forces dissipated their strength. The weather, in turn, strengthened the German defensive. The lakes and the terrain in front, which developed into a sea of mud, again were effective obstacles. The Russian offensive led to a temporary penetration into the sectors of the 250th and 251st Reserve Infantry, in the region south of Lake Narotsch. At the southern tip of Lake Narotsch, the machine-gun company of a jägar battalion stood its ground; its situation was critical. While on its right the enemy had broken into the German line of positions, hostile infantry on its left was pushing westward across the southern tip of the lake where the water was still frozen. The company concentrated the fire of its heavy machine guns on this opponent, mowing down whole rows of hostile infantry while they were fully exposed on the ice.

After several days of futile attempts to break through on a wide front, the enemy, on 23 March, made a final and supreme effort to attack, preceding his offensive with an artillery barrage of a force that was unusual for the Eastern Front. The Russian High Command placed great hopes in that day, for the weather had changed in the evening of 21 March. The thaw was followed by a severe frost. The conditions for a successful operation were given. However, it was too late. The Russian steam roller had suffered too greatly in the previous days. It lacked the strength to crush the German defense.

During the fighting of February 1919, German frontier guard units were engaged in battle with Polish forces in the region of the Lakes of Bentschen, in the Province of Posen. The lakes were frozen solidly. A Polish attack was expected. Owing to the severe cold, the establishment of defensive

measures was a difficult and tedious task. At 4:30 PM, Polish patrols increased their activity. Shortly thereafter, Polish forces located in the village of Gr.-Greitzig opened lively rifle and machine-gun fire on the German line of positions. The artillery was notified immediately by telephone. Shortly after the artillery was oriented, a Polish patrol cut the wire. Simultaneously, a large column of Polish troops emerged from the woods south of Neudorf. There was a full moon and the enemy was plainly visible on the snow-covered fields. At a point south of the German line, a flare rose from the woods which extended close to the German line; it was the signal for the joint attack. Five minutes later, the Polish forces launched their attack simultaneously from the north and south, but were repulsed all along the front. If the Poles had made use of the frozen lakes and exploited the element of surprise, their attack would have been successful.

An examination of the examples cited in the foregoing reveals that bodies of water alter their value with regard to military operation as soon as they are covered with ice thick enough to support a load. Whereas open waters may serve to guard flanks or offer obstacles in front, a frozen body of water must be included in the combat terrain and evaluated as such. However, here too, we must clearly distinguish between mobile warfare and war of position, even though the stalemate may be temporary. In the latter case, the sheet of ice retains considerable value as an obstacle, since time and means are available to prepare the obstacle (blasting, artillery fire). In any case, action along frozen rivers and lakes requires the defensive to employ strong forces and to strengthen the natural defenses. Crossing the ice may aid the offensive considerably in outflanking a defensive position and in penetrating otherwise narrow passages. Artificially flooded areas likewise lose their value in protracted freezing weather. On the other hand, marshy ground remains the most difficult obstacle to overcome.

Education of the Soldier in Time of War

Suggestions for New Commanders

[The following article is condensed from a translation of an article by Lieutenant Colonel Paul Knopff which appeared in the 24 May 1940 issue of the *Militär-Wochenblatt*. It is included here merely as an illustration of the extent to which training and education are carried in the German Army.]

Proper education of a soldier is fully as important as proper training. Training teaches him how to be a soldier and how to handle military weapons. Education is for the purpose of molding the mental state, so that the soldier will be able to meet all mental and physical demands of battle. The educational problem of the army is highly important in peace but even more so in war. The problem is difficult because of the shortage of qualified instructors. At the beginning, spirit must of necessity replace knowledge.

In training and education we may frequently be called upon to deal with older men who have passed the usual age of the normal recruit. It is sometimes difficult for these men to subordinate themselves to others who may be younger and perhaps not as well trained or educated. Normally the older man will have some record of achievement in civil life; he may oppose the military compulsion. Although the state cares for his family when he gives up the civil occupation, he will have anxieties about his family that will tend to repress his willing service. Such a man may be firmly convinced that he is more useful in his civil occupation than in being a soldier and subordinated to what sometimes appears to him petty superiority.

The close relationship within the company may foster good or poor morale. It is of great consequence whose influence will be greater: that of the commander or that of some soldiers who prejudice discipline.

In time of peace it is sufficient to teach the young soldier "the duties of a German soldier" and to show him, by means of daily practice, the necessary virtues. But in war, especially when dealing with older men, we must implant idealism. Examples of ancient and modern military exploits will accomplish this purpose. Older men, however, who have not been given a military education in their youth and who have not had inculcated in them those ideals which will steel them against the experiences of life, will tend to become pessimistic and skeptical. In any case they have their own opinion of life, opposing everything which is contrary to their own philosophy. These men having discarded many youthful ideals, are more mature; their intellect and reason are so developed that they may only be approached by presenting them with clean, sober ideals.

Their first question will be: what is the reason for having any war at all? It is necessary merely to mention the origin of the British Empire, Britain's interest in a German nation of small states, which would maintain a balance of power on the continent. The same cause brought about the War of 1914-1918, too. Both wars were for the British purpose of reestablishing the balance of power which had been disturbed. It must be made evident that the war was unavoidable and that it was because England wanted it. In this connection it is useful to present the political and military supposition of both wars. On one side the passive politics of Bethmann-Hollweg, who wanted to prevent war but only managed to vacillate until the time arrived when England was in a favorable position. As opposed to this, the active statesmanship of the Führer, who also wanted to prevent war (many examples can be stated), but who by prompt action forced England either to cease interference in German affairs or to fight a war under very unfavorable circumstances to England. There is no doubt that the English, French and Jews would treat us like slaves in accordance with Clemenceau's utterance to the effect that there are 20 million too many Germans in the world.

After this we must speak about the economic basis of this war. We must discuss rationing and the carefully planned supply of the civil population, the inefficiency of the

English blockade because of the Führer's ingenious politics in the east. All this must be taught to the soldier so that he will be willing and glad to make the necessary economic sacrifice both for himself and his family. The natural result of this instruction will be that any dissenter in the group will be earnestly convinced by his fellows.

It may be claimed that there is nothing new in this. Everyone who reads the newspapers knows it. The surprising fact is that there are many soldiers who do not read the papers or are not able to understand what they read, without a commentary. Many lack the education or the understanding for political or economic affairs. Others distrust newspapers. During training the soldier must become political-minded. He must be taught to view happenings with a new perspective and must be led away from the natural thinking of the masses.

Soldiers must be taught that food is necessary for life, but is not the chief object in life. They must rid themselves of the attitude of the citizen whose ideal it is to live as comfortably as possible. They must be led through the realization of the necessity of war on to the realization of the necessity of battle and sacrifice. Knowing the necessity of subordination they will logically realize the necessity of discipline. The younger the recruits are, the easier will be the problem of imparting discipline. If they are older, we must appeal to their reason and intellect. This can only be accomplished by one who can sympathize with their problem. They have already made a great sacrifice by giving up their civil occupations. It is not necessary to exhort them to sacrifice but merely to convince them of the necessity of sacrifice.

In addition to these fundamental ideas we must adhere, during instruction and other training, to the sound principles developed in peace time which promote willing service and hinder all things opposed to it. All unnecessary harsh talk by instructors should be eliminated. Instructors should realize that it is because of awkwardness or vague explanations, not lack of willingness that the recruit makes mistakes. An instructor must speak forcefully but the senseless criticism of noncommissioned officers must be stopped. Every soldier must learn to obey without question (this must be emphasized at every opportunity in training), and to carry out orders even if he does not understand them. However, in dealing with older men it may be necessary to make clear the purpose of an order. At all times noncommissioned officers must be prevented from assuming too much authority. Therefore the noncommissioned officers should be instructed at least once a week in the Military Criminal Code, in order that military justice will be dispensed in accordance with the intent and meaning of the code.

If the morale in an organization is poor, many noncommissioned officers strive to better it by intensive drill. The experienced officer will know the value of drill as a punishment for a specific offense and its value in other respects when properly employed, but in this case he should investigate the reason for the poor morale. Dullness is the enemy of all successful work and tends to destroy the spirit of any soldier.

Instructors must teach the recruits that military necessity demands many restrictions on personal freedom, that discipline is necessary in the accomplishment of all tasks, and subordination to authority is a military necessity. If a soldier instructed in this manner is not willing to submit to authority he must be forced to do so by lawful methods. That is the duty of the company commander but not of the noncommissioned officer. If a commander does not support his noncommissioned officers, there is danger that a good noncommissioned officer will take matters in his own hands, thereby making himself liable to punishment. At the same time no commander has the right to be indulgent if the maintenance of discipline demands sternness.

The inexperienced officer often attempts to be liberal, but he will eventually learn that it is his disagreeable but necessary duty to insist on the proper performance of many trivial tasks.

In no case must we think that all the little things which constitute discipline exists only in time of peace. We cannot repeat it often enough to commanders of all grades that the discipline demanded in peace reaps its fruit in war. Only a well disciplined unit will guarantee victory. In war we will increase rather than diminish the disciplinary requirements of peace time.

The commander has to direct the training and education of his troops and not delegate these duties to his subordinates. The company reflects the attitude and ability of its company commander. His spirit must enliven it. He must watch over his subordinate commanders during the training, and will demand proper treatment for his men. Once each week he should assemble his unit for a company discussion. This hour should be the high point of the week. The father of the company should discuss official and unofficial matters, current events, politics, anything which will improve the education of his men. The object must be to instill high ideals and fighting spirit in those under him.

Depending upon the ability of its commander, a unit will become either a mass of soldiers, perhaps fairly well trained, but otherwise unsoldierly and desirous of peace; or a well organized military and political community with only one aim: victory over our enemies. The war of the English, French and Jews is conducted not only on the battlefield, but also in the spheres of diplomacy, economics and propaganda. We know the intentions of our enemies. Let us be sure therefore that our German soldier is so educated that he will not only fight honorably on the field of battle according to his tradition, but also that his entire attitude will promote the victory.

Permanent Fortifications

["Dolgovremenniye ukreplenya," by Division Engineer Dr. V. Yakovlev. Translated from the Russian by Lieutenant Joseph Dasher, ORC, from *Krasnaya Zvyezda*, 3 July 1940.]

In the wars of this century permanent fortifications, adapted to a system of border defenses, have had to pass more than once through difficult crises. This has been largely due to the continued perfection of technical means and tactical methods of attack. However, after effecting the changes necessary for coping with such progress, permanent fortifications again rose on the border lines of countries and continued to serve the cause of defense.

During the War of 1914-1918 individual circular fortresses failed to justify themselves as an element of the defense of a country's borders. Even in the spring of 1915 it was becoming clear to everyone that individual fortresses were unable to protect a country from invasion by the enemy. France took the first step forward, and in August 1915 converted its main fortresses into new "fortified zones," the principal one among them being the Verdun fortified sector, which for three years withstood a combat test of most serious proportions.

After 1918, the conclusion was reached that separate elements of former fortresses (forts and their composite parts, fortified groups and pillboxes) were not as outmoded as they seemed at first. As a result all of these elements were again to find use, although in other forms, in contemporary fortified zones and in a number of fortified lines (Maginot Line, Siegfried Line, Mannerheim Line, etc.).

A painful blow to the invulnerability of permanent fortifications was dealt by the Red Army in its break through the Mannerheim Line, which numerous foreign experts regarded as more or less impregnable. Lately, as a result of the speedy penetration by the Germans of frontier fortifications in Holland, Belgium, Northern France, and finally of the powerful Maginot Line, the cry has been heard that permanent fortifications are useless against modern methods of combat.

Such a conclusion, however, is somewhat premature; furthermore it is insufficiently proven and may have harmful consequences. So far we have only isolated, insufficiently elucidated accounts of these penetrations. Press reports indicate that the Dutch fortifications were broken through as a result of the use by Germany of aviation, parachute troops and mechanized forces. The Belgian fortifications were attacked by dive bombers and flame-throwing tanks, aided again by parachutists and pursuit aircraft. It is indicated that, only because of the unexpected appearance of parachutists armed with grenades, and of flame-throwing tanks, the Germans succeeded in speedily capturing the large Eben Emael structure which formed a part of the Liége fortress. Similar methods were employed by the Germans in capturing other forts of the Liége system.

There are, at the same time, indications of comparatively long resistance offered by the Dunkirk fortified zone and by some of the Liége and Namur forts.

All in all these facts fail to provide a concrete basis for concluding that permanent fortifications are useless. There is information to indicate that the Dutch frontier fortifications, so quickly broken through by the Germans, were in part obsolete, and their modernization was apparently limited to the erection of additional weak fortifications of the field type.

As far as the Belgian fortifications are concerned, it is apparent that in their construction there was a repetition of the mistakes observed in Belgium and France during the War of 1914-1918. Powerful fortifications situated 5 to 6 miles apart, were patterned after the former isolated "outpost forts," which could not resist indefinitely as was shown during the first World War.

It is to be presumed that the new Belgian forts were not entirely completed in details. Their antitank defense was poorly conceived, while the intervals between them and the terrain in front of them was studded with badly camouflaged and too compactly situated small casemates of reinforced concrete, which were reminiscent of the "milky way." The French strategist Kühlmann and the engineer Norman warned their commanders against the erection of such a system of small pillboxes on the Maginot Line. According to literature available, small pillboxes were erected there only in moderate quantity and only in appropriate sectors. The Belgians, however, acted differently and furthermore gave no consideration to aviation and tanks.

As to Antwerp, this fortress succeeded in delaying German operations for a short period, though in a rather weak manner. But it is not known to what extent the Belgians were able to modernize this once "fortified camp." It is possible that here, too, modernization was incomplete and did not conform to modern combat methods.

The lengthier resistance offered by the French fortified region at Dunkirk may be explained not so much by the strength of its obsolescent fortifications, as by the presence of water obstacles and the wide inundation, which limited the activities of German mechanized forces. The circumstances and details of the action at Calais are not clear; apparently Calais had a stalwart garrison which was capable of maintaining itself for a time in the old fortifications.

As far as the Maginot Line is concerned, it stretches, as is well known, from the Swiss border to Longwy; between Longwy and Montmédy there was a weaker sector of this line, while the entire Franco-Belgian frontier—from Montmédy to Dunkirk—proved insufficiently defended. Since 1936 the French had intended to build this sector up, if not to the strength of the eastern portion, then at least so strongly as to preclude the repetition of 1914. However, these good intentions were not realized and there existed only an imagined "Maginot Line," prepared for defense almost at the very last minute by means of field fortifications.

But had this line been as strong as the Maginot Line, could it have been penetrated? The experiences of the Red Army in its efforts against the Mannerheim Line, as well as the events of the closing chapters of the war in France, point to a positive answer to this question. However, against a line of Maginot proportions, a breakthrough would

have taken much longer and the progress of further events would have been greatly changed.

In turning to the Maginot Line proper it must be stated that the line played an important role: The Germans did not risk a breakthrough of these fortifications for the first nine months of the war. Local penetrations of the Maginot Line began only after it had been outflanked from the northwest, and these occurred only in the Line's weakest sectors. Prior to that time statements had slipped into the newspapers that the Maginot Line was invulnerable throughout, but that "isolated penetrations can hardly bring to the Germans any decisive results."

After the Maginot Line was outflanked from the north and penetrated in the Saar sector and in the south in the direction of Colmar, individual fortifications of this line continued to resist almost until the armistice.

These facts would show that it may be a bit premature to declare that permanent fortifications are useless.

Even should it be admitted that permanent fortifications proved none too satisfactory in this war in the west, the question arises as how borders should be fortified in peace time. No one will dare to say that borders should remain entirely unfortified until the start of a war at which time we can begin to build trenches, install pillboxes of reinforced concrete with light armored turrets, surround them on all sides by nets of barbed wire, and erect antitank obstacles. This was the very method which was practiced by the Dutch, the Belgians, and apparently also by the French on the "Weygand Line." All these lines were speedily broken through by the Germans, with the aid of new technical means and tactical methods.

In modern warfare, maneuver in certain sectors must be combined by operations in position. Therefore, those areas which are protected by field fortifications, with certain additions from the arsenal of permanent fortification, undoubtedly have vast importance. A well trained army must be able to prepare such areas, depending upon the progress of operations. But this should in no measure reflect on the necessity of erecting permanent fortifications on the country's borders in peace time, as well as at certain points in the interior.

In this connection, however, it must be remembered that in their grouping, form and details of construction, these fortifications should be a protection not only against contemporary weapons and tactics, but also against such new methods as might be employed in the future. The science of military engineering is feverishly working toward cooperation with the offensive actions of our own army—an entirely proper move, as shown by the experiences of recent wars. Nevertheless, while preparing to attack, some thought must be given to defense, and, therefore, to permanent fortifications.

The war in the west has introduced new weapons of attack against permanent fortifications. In addition to powerful artillery, we now have dive bombers, tanks that throw flame as well as steel, mechanized engineer units with all their equipment, and, finally, especially equipped parachute landing parties. All this undoubtedly calls for a reconsideration of the forms of permanent fortification, creation of new groupings, more satisfactory camouflage, and, finally, for the training of special garrisons. These garrisons will have to defend their fortifications stubbornly and sturdily, while remembering Napoleon's words on the subject of fortifications: "Fortifications are always useful, they should never be disregarded, provided they are properly manned."

"Of what value is experience if it is not associated with meditation. . . . It is only by associating mentality with work that man differs from the beast of burden. The ass, that carried Prince Eugene's pack saddle for ten years, did not thereby become a better tactician."—Frederick the Great

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"Like the manufacturer, the modern soldier must always look for something new and not stay hypnotized by the lessons of the last campaign; but that does not prevent him from giving them some consideration."—General Estienne

Academic Notes

Current School Material, Which Affects Instructional Procedure or Tactical Doctrines

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COLONEL M. C. SHALLENBERGER, Infantry, *Assistant Commandant*
LIEUTENANT COLONEL P. R. DAVISON, Cavalry, *Secretary*

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Administrative Section	LIEUTENANT COLONEL A. P. THAYER, *Cavalry*
G-1 Section, Personnel	LIEUTENANT COLONEL W. A. COPTHORNE, *Chemical Warfare Service*
G-2 Section, Military Intelligence	LIEUTENANT COLONEL J. B. THOMPSON, *Cavalry*
G-3 Section, Operations and Training	LIEUTENANT COLONEL P. A. HODGSON, *Corps of Engineers*
G-4 Section, Supply and Evacuation	LIEUTENANT COLONEL T. M. CHAMBLISS, *Infantry*
Extension Courses	LIEUTENANT COLONEL A. J. MCFARLAND, *Infantry*

Combat Intelligence

[From Professional Papers of Instructors of II Section, Command and General Staff School.]

During the past few summers, umpires returning from maneuvers in different parts of the country have too frequently had to report that the weakness of the maneuvers rested in the intelligence activities. There seemed to be a tendency on the part of many G-2's to accept the reports of the air service as final and to stake out a map problem based on incomplete information. Little heed was given to the reconnaissance value of cavalry and infantry, the physical contact on the ground. The result was the delivery of beautifully coordinated attacks that were too often mere blows in the air. One division assaulted a MLR that proved to be five miles further back than the attacker's G-2 had located it. In another case the right flank of the hostile force was found where the left flank was thought to be based. These are examples of improper use of the means available, of incomplete information of the enemy, of unsound Combat Intelligence. Failures of this kind may result in nothing more than unkind remarks at critiques in time of peace. In time of war they result in disaster.

Since *Combat Intelligence*, the subject with which we are primarily concerned here, is one form of *Military Intelligence*, it might be advisable to define the latter term first. "*Military Intelligence* is the most complete and most authentic information of a possible or actual enemy or theater of operations, together with the technical, tactical and strategical deductions therefrom. It includes information concerning the enemy's capabilities to oppose the will of the commander of our own forces, as well as all that relates to the territory controlled by, or subject to, the influence of the enemy."

Obviously there are two basic elements which enter into the make-up of *Military Intelligence*. They are *information* and *sound deductions therefrom*. If the information is inaccurate or incomplete, the deductions can easily be unsound. Sound deductions can be obtained only by making every effort, by utilizing every available agency to obtain complete and authentic information. A careful sifting, sorting, evaluating, analyzing and interpreting of the information at our disposal results in the finished product which we call *Military Intelligence*.

As previously stated, *Combat Intelligence* is one class of *Military Intelligence*. The other is *War Department Intelligence*, produced both in peace and in war by the War Department which studies every country and possible theater of operations. These studies are not limited to matters of a strategical nature, or to those dealing with tactics, technique and supply. They are concerned also with the national history, the national psychology, the economic and political aspirations, and the military geography of the country in question, as well as with its military and naval strength, the personality of its high officials and commanders, and its general capabilities for waging war.

Combat Intelligence is the *Military Intelligence* produced in the field, usually by tactical units, after the outbreak of hostilities. It includes items pertaining to the enemy and his situation, and furnishes a basis for future operations. It is usually confined to "the terrain and to the location, strength, composition, dispositions, movements, armament, equipment, supply, tactics, training, discipline, and morale of the enemy forces opposing a combat unit and the deductions made from a consideration of these factors."

The object of *Combat Intelligence* is to produce for the commander as complete a picture as can be furnished of the hostile situation, in order that he may reach a decision and formulate a plan. The ideal, of course, would be to tell the commander exactly the line of action the enemy is going to adopt. This can never be done with positive assurance. The thing that can be done is to determine *every* line of action that the enemy can possibly adopt, and which would have a bearing upon the accomplishment of our mission, in order that the commander may arrive at a decision which will accomplish his assigned mission in spite of everything the enemy can do. That means that the commander's intelligence agencies must furnish him with a basis for a sound decision in which the chances of being surprised by the enemy are reduced to a minimum. This achievement is based upon a foundation of teamwork and training.

Capabilities versus Intentions

There are two schools of thought in modern armies in regard to the determination of the enemy's line of action. One school endeavors to ascertain by deductive reasoning, what the enemy *intends* to do; the other seeks to determine what the enemy is *capable* of doing.

The former school, from information of the hostile dispositions, strives to reconstruct the enemy's intention. If his dispositions seem inconclusive this method aims to establish his intention by making an estimate as to what seems the most advantageous for him, or conversely, the most disadvantageous for us. In other words, this method tends to attribute to the enemy the intention which we think he ought to have. It will lead to positive conclusions in the majority of cases. History shows, however, that the soundness of these conclusions is often questionable.

The inadequacy of the method of intentions results from this. The enemy's decision and line of action are probably, like our own, based on the mission, the available means, the terrain and the enemy (our own forces). The method of intentions starts out, therefore, with the enemy's mission. There is, however, in our tables of organization, no provision for personnel with specialist rating as clairvoyant; nor is there, in the table of allowances, any mention of the ouija board. Without these aids, our conclusion as to the enemy's mission is a mere guess. The next step, unless we rely entirely upon what we see of his dispositions and disregard his unseen dispositions, is to figure out what the enemy ought to do in order to carry out his supposed mission; but as we do not know how much he knows about us, this in-

volves basing an inference upon an inference. It is, of course, possible to assume that, regardless of what information he has about us, he will follow his tactical doctrine or his habits. Then again, we may obtain direct information as to the enemy's intentions from the enemy himself, if he should be so indiscreet as to send important radio messages in the clear or as to let his orders be captured.

But suppose that we do capture his orders, and assume that he intends to carry them out. There is certainly nothing to prevent him from changing his mind and issuing a counterorder. Von Bulow, at the Battle of Guise in 1914, had, within a few hours, four different intentions for the operations of his army the next day, and he issued four different orders. Even if the French had obtained an authentic copy of von Bulow's orders, they would have had only one chance in four of being right. While this is an extreme case, it proves nevertheless that information bearing only on the intentions of the hostile commander is not enough.

Nor are we safe in assuming that the enemy will follow his usual tactical doctrine or habits. Prior to 15 July 1918, it had been the habit of the French to defend their front lines stubbornly against German attacks. On that date, the German First and Third Armies, apparently assuming that the French would stick to their pattern, made an attack on the French Fourth Army. As a matter of fact, the French on this occasion had left only small detachments in the front line. The German attack, considerably broken up by these small detachments, fell an easy prey to the French counterattack on the following day. Apparently no consideration had been given by the Germans to the fact that the French were capable of staging a mobile defense.

In all fairness to the method of intentions, it must be stated that the operations of the French Fourth Army in the case just mentioned may be cited as an example in which the hostile intention was definitely and accurately established. However, in this case, in which the French established the frontage, date, hour and strength of the German attack, the French commander based his important decisions as much on the capabilities of the enemy as on his intentions.

It is quite possible that the dispositions of the enemy are a deliberate effort on his part to deceive us as to his intentions. At Kut-al-Amara in September, 1915, the Turkish position was astride the Tigris. The British demonstrated so realistically against the position on the south bank that the Turks moved their general reserve to that side of the river. During the night the British moved to the north bank the forces which had made the demonstration, and made a wide envelopment which routed the Turks on the north bank before the reserve could be brought back.

In 1781, Washington, for some months, had been planning to attack New York, and some of his letters revealing that plan had fallen into British hands. In August, that year, news that De Grasse would not join in an attack on New York but was sailing for the Chesapeake, made Washington shift to an alternative plan—that of marching to join Lafayette against Cornwallis at Yorktown, 400 miles away. Washington took the utmost pains to make the British believe that he was moving from his position in the Highlands to attack New York from the New Jersey shore via Staten Island. He had an immense camp site laid out in New Jersey. He set up bake ovens on the shore opposite Staten Island, and sent a small force to protect them. For ten days he conducted his march so as to appear to be heading for Staten Island. He took along on wheels in his column a large number of boats—indicative of landing operations. He wrote some more letters in which he referred to his impending attack on New York, and contrived to have them fall into Clinton's hands. Washington started marching 19 August, 1781, and it was not until 2 September that Clinton fully realized what Washington was up to. By the time Clinton had assembled the necessary transports and appeared off the entrance to Chesapeake Bay, it was too late. Cornwallis had been forced to surrender.

The foregoing examples clearly show the principal danger of the Method of Intentions, namely, that of reaching an unjustified and preconceived idea of what the enemy will do, and of failing to recognize the fact that other lines of action remain open to him. In its last analysis, the Method of Intentions resolves itself into the placing of oneself in the position of the enemy. This process is difficult because one can seldom know the physical and mental condition of the opponent, his reactions, and his process of reasoning. The best chance of success occurs when one has an intimate knowledge of the mental process of the opposing commander, as well as of the tactical doctrine of the enemy.

The Method of Capabilities takes into consideration all lines of action of which the enemy is physically capable and which can affect the execution of our mission. It does not discard from consideration any such line of action until it appears that the enemy's dispositions are such that he has become physically incapable of adopting that line of action. Based on information which is continually arriving, the Method of Capabilities endeavors to eliminate from consideration each of the enemy lines of action when, and only when, the enemy can no longer undertake it under circumstances which would interfere with our mission. The ideal is to narrow to one the enemy capabilities which can affect us. As long as more than one exists, the commander should be informed as to the time and circumstances in which the enemy can put them into effect, in order that a plan may be adopted which will carry out the mission regardless of which capability the enemy does adopt. If no such plan is available, if it is necessary to take action as though one of the enemy capabilities did not exist, the Method of Capabilities will at least enable the commander to take a calculated risk. He is in a position to "weigh the risks, then risk the chances," if he so desires.

The Method of Intentions tends to make the enemy's supposed mission the basis of our action; the Method of Capabilities makes our own mission the basis. The former method uses deductive reasoning guesses; the latter confines itself to inductive reasoning based on observation and calculation. Under the former method, G-2 assumes part of the commander's responsibility as to taking risks; under the latter, the commander properly exercises full responsibility, if a risk must be taken.

There is, of course, the danger of reaching the conclusion that the enemy is incapable of that which he can really do. Such a conclusion may, for example, result from inadequate reconnaissance of the terrain. At Chancellorsville, Howard assumed that no force could possibly penetrate the thickets

on his flank. The Confederates, nevertheless, did penetrate the thickets. At a recent maneuver the Reds did not bother to protect their command post from the south flank because it was at the base of a supposedly impassable mountain. The Blue cavalry went up one side of the mountain, down the other, and captured the commander and his staff.

A false assumption as to enemy capabilities may, of course, result from any other false premise. It is highly improbable, however, that the Method of Intentions would work any better in such cases. The Method of Capabilities should always give as good results as the Method of Intentions, and at times its results will be better. The fundamental principal to be observed is that the enemy should not be considered incapable of any action which can affect our mission until our intelligence operations have proved him incapable.

The Production of Military Intelligence

In the accompanying chart are indicated the several steps in the production of military intelligence. At the bottom is indicated the foundation upon which the task rests —teamwork and training.

The first step in our process is a consideration of our own mission and of the enemy's possible lines of action, or capabilities. Putting these capabilities into the form of inquiries as to which one the enemy will put into execution, we arrive at what is known as "the essential elements of information." This is our second step and it produces a statement which a commander must have in order to make a decision, conduct a maneuver, or provide his staff with the necessary information for formulating the details of a plan.

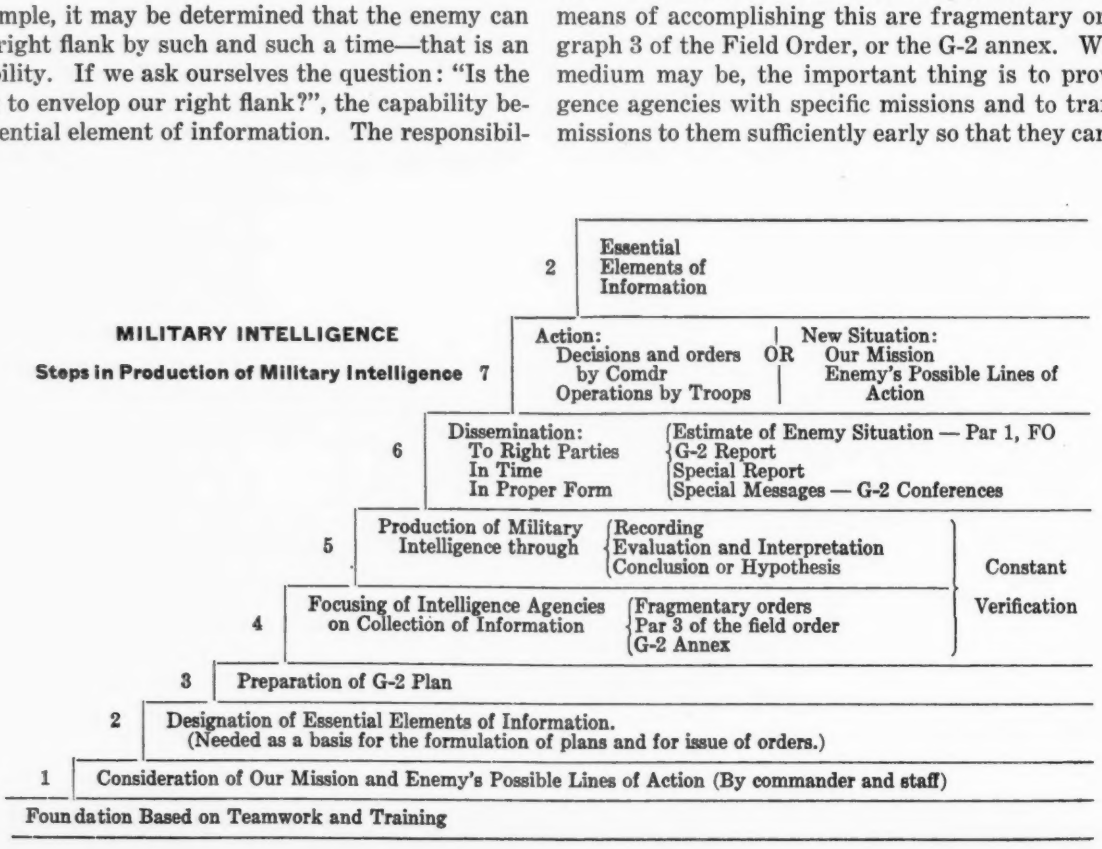
For example, it may be determined that the enemy can envelop our right flank by such and such a time—that is an enemy capability. If we ask ourselves the question: "Is the enemy going to envelop our right flank?", the capability becomes an essential element of information. The responsibility for the designation of the essential elements rests with the commander; it is a command function.

Terrain, in appropriate cases, is one of the essential elements. G-2 is not in a water-tight compartment in the study of the terrain; he must cooperate with G-3, by collecting information which his engineers cannot reach. G-2's slant on terrain will include the estimate from the enemy's point of view including the favorable and unfavorable effects of the terrain on all possible lines of action open to the enemy. There must be an analysis of terrain for every possible enemy situation, a study of the influence of terrain on every possible enemy decision, in brief, an answer to the question: "How is the enemy going to make the terrain fight for him?"

The next step is the preparation of the G-2 or intelligence plan. Having analyzed our essential elements of information we must transform them into missions, alloting the missions to collecting agencies and designating the time and the place where information is to be reported. Without going into the details of the intelligence plan, it may be stated that it includes the following:

(1) Phases or periods of the operation
(2) Essential elements of information
(3) Analysis of these essential elements
(4) Collecting agencies or other sources
(5) Specific orders or requests
(6) Hour and destination at which information is to be reported.

When approved, the completed intelligence plan forms the basis for orders to all collecting agencies; in other words, these agencies are put to work. The attention of the agencies is focused on the collection of specific information. Our means of accomplishing this are fragmentary orders, paragraph 3 of the Field Order, or the G-2 annex. Whatever the medium may be, the important thing is to provide intelligence agencies with specific missions and to transmit these missions to them sufficiently early so that they can return the


MILITARY INTELLIGENCE
Steps in Production of Military Intelligence
2 Essential Elements of Information
7 Action: Decisions and orders by Comdr; Operations by Troops
OR
New Situation: Our Mission; Enemy's Possible Lines of Action
6 Dissemination: To Right Parties; In Time; In Proper Form
Estimate of Enemy Situation — Par 1, FO
G-2 Report
Special Report
Special Messages — G-2 Conferences
5 Production of Military Intelligence through
Recording
Evaluation and Interpretation
Conclusion or Hypothesis
Constant Verification
4 Focusing of Intelligence Agencies on Collection of Information
Fragmentary orders
Par 3 of the field order
G-2 Annex
3 Preparation of G-2 Plan
2 Designation of Essential Elements of Information. (Needed as a basis for the formulation of plans and for issue of orders.)
1 Consideration of Our Mission and Enemy's Possible Lines of Action (By commander and staff)
Foundation Based on Teamwork and Training

desired information in ample time for use. It may be that this will require a tactical operation on the part of some combat unit, in which case the closest cooperation with G-3 is necessary. Having been given their missions, reconnaissance agencies then concentrate on getting the necessary information in time to be of value. They naturally do not limit their efforts to the collection of essential elements only. Any and all information picked up should be submitted.

What are the agencies available to G-2 for the collection of information? Any subordinate unit may at times be able to furnish information, but usually G-2's chief reliance in the division is on attached cavalry and observation aviation (including both airplanes and balloons) and on front-line units. As stated above, he must consult with G-3 so that possible tactical and possible intelligence missions can be coordinated. Subordinate units may, according to their nature, operate by observation, by active reconnaissance or by raids to capture prisoners and documents. Ground agencies should always report identifications of enemy units if available; they may be ordered to obtain identifications when these are particularly important.

The field and antiaircraft artillery have intelligence services of their own which obtain information of enemy batteries and aircraft, respectively, for their own purposes. This information may also have military intelligence value, and G-2 may plan to have them directed to furnish to division headquarters such information as they obtain. He may plan to have higher or neighboring units furnish certain information available within their respective spheres.

The G-2 section itself conducts certain intelligence operations. It will normally have its own observation posts. G-2 personnel may be sent out with reconnaissance patrols or raiding parties to capture prisoners or documents. By whomever captured, these are examined in the G-2 section.

Prisoners cannot lawfully be coerced into telling anything but their name, grade, and serial number. However, they can often be cajoled into talking by an alert questioner who employs a friendly manner. In the division the interrogation is conducted primarily with a view to obtaining identifications and to developing information of immediate tactical importance to the commander. The investigator should be skilled in the art of cross-examination, and should be thoroughly versed in tactics, the enemy organization, his activities, and the order of battle.

Enemy official documents may often furnish information of use to the division. Private documents, such as letters from home, may furnish information as to where the soldier comes from, and hence often as to the division to which he belongs. But they are probably of greater value to higher echelons which may be interested in enemy economic conditions and morale.

The fifth step in the production of Military Intelligence begins with the recording of the information received in the G-2 office. It must be entered in the journal and whether or not it is entered elsewhere depends on its intelligence value. Usually, if it is information of the enemy, it has intelligence value and it will be entered in one or more other places—the G-2 work-sheet, the G-2 situation map or the file of information that may be of future value. Recording information should not, however, be permitted to interfere with the processes of producing and disseminating intelligence, which start with the evaluation and interpretation of information to determine its probable accuracy, significance and importance.

We must consider whether, judging from previous experience or from the nature of the source, the source itself is accurate and reliable. The story told by a prisoner, a deserter from the enemy, or a hostile native, may be a deliberate lie. The legend of the fall of Troy illustrates several errors in military intelligence procedure. When the Greek Fleet sailed away the Trojans determined, by the method of intentions, that it was the Greek intention to return home, whereas, in fact, the true intention was to return under cover of darkness. The Greeks left the wooden horse outside the walls of Troy. One smart Trojan, using the method of capabilities, suggested that there might be men concealed in the belly of the horse, but no attention was paid to him. The Trojans captured a Greek who had been left behind by the Fleet. He stated that he had fled from the Greek camp because he had been persecuted and unjustly accused of something, and he so worked on the sympathies of the Trojans that they fell for his story. They asked him then what the purpose of the horse was, and he stated that the Greeks had left it behind to propitiate the Goddess Athena. He further said that the Greeks had made the horse bigger than the walls of Troy so that the Trojans could not take it into the city. The Trojans thereupon tore down part of the wall and dragged the horse inside. That night the men inside the horse came out and let in their companions who had returned with the Fleet. And great was the fall of Troy—simply because of one Greek prisoner who had been left behind by the Greeks as a plant.

Under the head of accuracy we must consider whether any new information received is confirmed or corroborated by other information previously received. We must determine in what respects the item of information agrees or disagrees with available information covering the same point; and if it is at variance with other information, we must, if possible, arrive at a conclusion as to which is the more likely to be correct. In this connection we must be careful of two things:

(1) The fact that one piece of information seems more likely to be correct than another does not absolutely make the former correct nor the latter incorrect;
(2) It is always possible that two apparently conflicting pieces of information may both be correct.

We must guard against discrediting information merely because it appears to contradict other information. As mentioned before, evidence must not be discarded simply because it does not fit into a preconceived picture.

In the interpretation of information, the facts must be considered in the light of other facts. No single fact can be interpreted by itself. Some of the questions which should be considered are the following:

(1) What does it mean in connection with what is already known?

(2) Does it alter or add significance to information previously received?

(3) Does it tend to confirm the estimate as to the enemy situation, or does it indicate that the estimate is incorrect?

In all this work G-2 constantly bears in mind that whatever he produces must be furnished in sufficient time to be of use. This brings us then to our sixth step—the dissemination of information. This dissemination is to the right persons, in time, and in proper form. The means of dissemination are, as indicated on our chart, the estimate of the enemy situation, the G-2 report, the special report and special messages or conferences. In general, information is disseminated up, down, laterally, and to the commander of the unit. Elaborating on these means we encounter first the intelligence estimate of the situation. This intelligence estimate will be furnished the commander by G-2 either upon his own initiative when warranted by developments in the situation or when required by the commander. It may be written or oral and will summarize the enemy situation and capabilities. Usually G-2 will be able to anticipate the necessity for such an estimate: he must, however, be prepared at all times to furnish an estimate to his commander on call. A form for the G-2 estimate of the enemy situation is found in the Basic Field Manual 30-5. The next means of dissemination is the periodic G-2 report. It is an intelligence document that sums up intelligence which has been collected and evaluated during a given period. It is issued by all intelligence sections of combat units, from the army to the battalion, and is usually supplemented by a situation map or overlay. The period of time to be covered by this report is prescribed by higher headquarters, or by the commander of the unit in the absence of such instructions. It is a convenient means for keeping higher, lower and adjacent units informed of the enemy situation as determined by the unit preparing the report. Our next means of dissemination is the special report. Although higher echelons will receive copies of the periodic G-2 reports of the next lower unit, these periodic reports are more or less complete documents with rather wide distribution and their preparation, reproduction and transmission will require appreciable time. It is apparent that occasion will arise when special reports must be speedily transmitted; for example, by telephone. Consequently, higher echelons in addition to receiving periodic reports will usually require special reports from lower units summarizing the situation and enemy capabilities.

Under conditions where immediate transmission of items of information is necessary, and the individual or headquarters concerned cannot be informed in person by the intelligence officer or a member of his section, special messages transmitted by airplane, wire, special messenger or other rapid means of communication are employed.

In order that there may be harmonious exchange of information between various intelligence sections of higher, lower, and adjacent units, personal conferences between the members of sections whose work is interrelated are frequently held. This applies especially to the intelligence services, the artillery information service, the antiaircraft warning service, and the air intelligence sections. Whatever the means used, it is absolutely essential that G-2 disseminate important information to those persons and units concerned in time for it to be of use.

Our chart now leads us to the seventh step, and it is a choice between action or a new situation. If it is action, decisions and orders by the commander follow putting into effect operations of the troops. If it is a new situation, we are led back to the second step—a consideration of our mission and the enemy's possible lines of action, and we do it all over again.

As we considered this chart and developed the step by step process in the production of military intelligence, the thought undoubtedly occurs that this was a time-consuming affair. It is our business to overcome the time-consuming element. It may be safely stated that as combat troops increase their mobility, the difficulties of the opposing G-2 increase in geometrical ratio. For example, if mobility is increased by three, the difficulties of G-2 are multiplied by nine. The necessity then for fragmentary orders and for special reports and special messages is apparent, and their use will prove satisfactory in the majority of cases. G-2 cannot be a bookkeeper at the expense of getting the information to the proper person in time to be of use. The bookkeeping should not be neglected and it will follow in proper sequence, but the action cannot be delayed. Time and space control all military matters. An hour's delay in the G-2 office may result in an hour's delay in the decision to attack. Visualize what an hour means in a motorized movement or in the transmission of orders from higher to lower echelons. G-2 must think quickly and act quickly, and develop the quality of clear and exact analysis while so doing.

To facilitate this he must at all times be specific in his instructions to his reconnaissance agencies. He cannot say to a cavalry commander: "There's the wide, wide world, go out and learn something about the enemy." On the other hand he must ask: "Is the enemy in such and such a location? What is he doing there? Where are his flanks? Where is the bulk of his artillery located? Are there movements in such and such a direction?" Then when his reconnaissance agencies have come back with the answers to these questions, he must be prepared to draw conclusions promptly which present the truest possible picture to his commander.

We have, all of us, some time in our careers, participated in maneuvers and field exercises where decisions were based on hunches, rumors, and gossip picked up by the sergeant major. It is hoped that this article has convinced the reader that in the study and execution of intelligence activities there must be a certain amount of Intelligence, in both senses of the word, applied to the effort.

Map Problem

	Paragraphs
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SECTION I

Situation and Requirement

	Paragraph
General situation	1
Special situation	2
Requirement	3

1. GENERAL SITUATION.—*a. Maps.*—Strategic Map, Gettysburg-Richmond (1934), 1 inch = 4 miles; Gettysburg sheet. Special Map A, 1:62,500. (See maps at end of problem.)

b. Boundaries.—The Susquehanna River is the boundary between Red (east) and Brown (west). The Potomac River is the boundary between Brown and Blue. Brown is a small nation without military or naval forces.

c. Red Organization.—Red units are organized into corps of three square divisions each. The Red system of numerical designation of units is known to be uniform as follows: The I Corps is composed of the 1st, 2d, and 3d Divisions, the II Corps of the 4th, 5th and 6th Divisions, etc; the 1st Division is composed of the 1st, 2d, 3d, and 4th Infantry Regiments, the 2d Division of the 5th, 6th, 7th, and 8th Infantry Regiments, etc.

d. Blue Decision to Invade Brown.—(See Strategic Map.) Since Red's declaration of war against Blue essential war materials have been imported by Red from Brown over the PA R.R. through Huntingdon (277-830), Lewistown (320-842), and Duncannon (367-818) and crossing the Susquehanna River from Marysville (376-813) to Columbia (420-774), both inclusive. The Blue government decided to invade Brown and seize the crossings of the Susquehanna River.

2. SPECIAL SITUATION.—*a. Blue I Corps, 10:00 PM, 4 April.*—The Blue I Corps, with normal reinforcements (less 901st to 903d Cavalry Squadrons), is advancing north through Washington and Baltimore with orders to seize and hold the crossings of the Susquehanna River from Columbia to Marysville, both inclusive, and to prevent traffic from crossing the river between those two points.

(1) The 1st Cavalry (Regiment) arrived in York by marching at 1:00 PM, 1 April.

(2) The 1st Division, covering the advance of the remainder of the corps, detrained in York between 10:00 PM, 1 April, and 9:00 PM, 2 April. The division occupied a position on Conewago Mountains during the afternoon, 3 April, and at 10:00 PM, 4 April, is disposed as shown on Special Map A. The 1st Cavalry and the 101st Observation Squadron are attached to the division.

(3) The 101st Observation Group, operating from airdromes at Baltimore, has kept the roads and railroads between Conewago Creek and the line: Blue Mountain (374-810)—North Mountains (290-760) under observation since daylight, 1 April.

(4) The 901st Coast Artillery (AA) is protecting the crossings of the Potomac River at Washington.

(5) The 901st Brigade (L of C), reinforced, is securing the communications of the corps north of the Potomac River.

(6) The 2d Division began to arrive in York by rail at 6:00 PM, 4 April. The movement of the division is scheduled to be completed by noon, 5 April.

(7) Command post I Corps: York.

(8) The remaining units of the corps are scheduled to arrive as follows:

(a) The 1st Cavalry Brigade (less 1st Cavalry) by rail at New Freedom (400-739) between 1:00 PM and 7:30 PM, 5 April.

(b) The corps artillery by rail at York or south thereof between 8:00 PM, 5 April and 9:00 PM, 6 April.

(c) The 3d Division by two motor columns arriving simultaneously in Baltimore at 7:00 PM, 7 April.

(d) Other corps troops and reinforcing units by motor transportation from Baltimore as recommended by the corps commander.

(9) The Susquehanna River from Havre de Grace (457-716) to Columbia (420-774), both inclusive, is being patrolled by newly organized and partially trained units provided by GHQ. The bridges as far north as Saginaw (401-779) have been destroyed.

b. Information of the Enemy Collected Prior to 6:00 AM, 4 April.—G-2, I Corps, is familiar with the following information of the enemy collected prior to 6:00 AM, 4 April:

(NOTE: The small superior numbers in parentheses, as an example, (1) indicate that the information has been plotted on Special Map A and identified by a corresponding number.)

(1) *Railroads (See Strategic Map)*

(a) *C. V. R.R.*

Prior to 12:30 AM, 2 April.—Only an occasional train.

12:30 AM, 2 April to 9:00 AM, 3 April.—Two-way traffic at capacity density between Harrisburg and Mechanicsburg (370-796). Cavalry, infantry, artillery, and trains were unloaded at Lemoyne (378-800) and Mechanicsburg throughout the period.

9:00 PM, 3 April to 6:00 AM, 4 April.—Heavy one-way traffic. All trains ran toward the east and were apparently empties returning toward Harrisburg. No further unloadings from the line observed.

(b) *P. and R. R.R.*

Prior to 12:30 PM, 2 April.—Only an occasional train.

12:30 PM, 2 April to 5:45 PM, 3 April.—Two-way traffic at capacity density between Harrisburg and Brantsville (365-787) (Spelled *Brandtsville* on Special Map A). Troops, artillery, and trains were unloaded at Brantsville, D & M Junc (368-787), and Dillsburg (367-783) throughout the period.

5:45 PM, 3 April to 4:45 AM, 4 April.—One-way traffic at capacity density with all trains moving west and eventually returning over the C. V. R.R. toward Harrisburg. Approximately one-fourth of the trains turned north at D & M Junc and went on sidings at Mechanicsburg where troops and motor vehicles were unloaded.[8] Another one-fourth turned north at Carlisle Junc (354-785) and went on sidings at Carlisle where artillery and tractors were detrained.[17] From 5:45 PM to 7:40 PM, 3 April the remaining trains went on sidings and apparently unloaded supplies at White Hill (377-797), Rossmoyne (376-793), Bowmansville (373-790), D & M Junc, Dillsburg, and Brantsville. From 7:40 PM, 3 April to 4:45 AM, 4 April, approximately one-half of the trains on this line were switched to the G. and H. R. R. south of Carlisle Junc. [See subparagraph (c), next below.]

(c) *G. and H. R.R., south of Carlisle Junc*

Prior to 7:40 PM, 3 April.—No traffic observed.

7:40 PM, 3 April to 4:45 AM, 4 April.—Trains moved south at 24-minute intervals, unloading troops, artillery, and trains at Starners (351-773) and Aspers (351-767).[18]

After 4:45 AM, 4 April.—No traffic.

(2) *Summary of other information (see Special Map A).*

(a) *From 4:00 PM, 2 April to 4:45 AM, 4 April.*—Infantry, horse-drawn, truck-drawn, and tractor-drawn artillery, and trains moved in small detachments from D & M Junc (368-787) and Brandtsville (366-788) toward Dillsburg (368-784) and Beavertown (367-783).

(b) *11:30 AM, 3 April.*—Red cavalry holding the line:[16] Roundtop (379-783)—Mt Pleasant Schoolhouse (375-777)—Bermudian (368-773).

(c) *1:00 PM, 3 April.*—Blue cavalry checked by Red infantry detachments on the line:[2] CR 597 (387-793)—Navoo (382-789)—Andersontown (378-788).

(d) *5:00 PM, 3 April.*—Numerous troops, animals, and artillery in bivouacs in the area:[4] RJ 390 (379-795)—RJ 393 (379-797)—CR 391 (376-796)—RJ 456 (377-794). Troops and artillery in bivouacs in the area:[3] CR 380 (382-798)—CR 384 (380-798)—stream junction at (380.0-795.7)—RJ at (382.9-796.5). A large amount of trucks parked about Eberlys Mill (380-798).

(e) No hostile motor movements of importance observed.

c. Enemy Activities Subsequent to 6:00 AM, 4 April.—*At 10:00 PM, 4 April* G-2, I Corps, is familiar with the following information collected subsequent to 6:00 AM, 4 April:

(1) Columns marched south from the Eberlys Mill[3]-Rossmoyne [4] area at 9:00 AM via routes shown on Special Map A.[5] The two east columns included infantry and truck-drawn artillery, the center column tractor-drawn artillery and trains, and the two west columns infantry and horse-drawn artillery. After passing the approximate line: CR 645 (387-789)—RJ 857 (376-784) the main bodies of the columns broke up, apparently going into assembly areas in the woods to the south. During the afternoon Red infantry, supported by light artillery, drove in the covering forces of the Blue 1st Division and is now in contact with the Blue main line of resistance as shown on Special Map A.[7] By 6:00 PM, fifteen batteries of artillery had been located in the area indicated on Special Map A.[6] Shortly before dark these batteries fired intermittently at prominent land marks in the Blue position. No intrenching or other defensive works had been observed up to 9:45 PM. Three prisoners captured near Maytown (384-783) belong to the Red 15th Infantry. Two prisoners captured at CR 494 (386-785) are from the Red 16th Infantry.

(2) Occasionally throughout the afternoon mounted detachments of eight to thirteen men, usually accompanied by two pack animals, have been observed north of the unfordable section of Conewago Creek.[1] A trooper killed at RJ 347 (393-782) was from Troop A Red 3d Cavalry.

(3) At 9:30 AM, a column 2000 yards long and composed of trucks carrying personnel, followed by truck-drawn artillery[9] was moving southeast from the direction of Dillsburg at approximately twenty miles per hour with the head of the column at Mt Zion Church (373-779). The column continued to the vicinity of Minebank Schoolhouse (374-775) where it broke up, the vehicles moving to concealment in the woods nearby.

(4) At 10:00 AM road blocks, protected by rifle and machine-gun fire,[19] were encountered by Blue cavalry patrols at Limerock Mill (356-768), RJ 683 (355-765), and Center Mills (352-765).

(5) About noon Red cavalry, reinforced by motorized infantry and truck-drawn artillery, attacked[11] the Blue 1st Cavalry along Bermudian Creek and drove the Blue regiment to the east of Conewago Creek. This hostile cavalry force is now holding the west bank of Conewago Creek as shown on Special Map A.[12] Prisoners have been identified as belonging to the 1st and 3d Squadrons, Red 3d Cavalry and Companies A and D, Red 20th Infantry.

(6) Since 5:00 PM several groups of from four to eight men have been observed in the area south of Bermudian Creek and between the line held by the Red cavalry and the line: Bermudian Churches (367-770)—Amatus (367-766). These groups arrived from the north or northwest, traveled in motor vehicles of various types and apparently studied the area in considerable detail.

(7) (See Strategic Map) Throughout the day one-way traffic has been operated at capacity density over the Harrisburg—D & M Junc—Shippensburg—Carlisle—Harrisburg loop. One-fourth of the trains have continued to turn north to Mechanicsburg and one-fourth to Carlisle. Unloadings have continued at Mechanicsburg and Carlisle as on 3 April. Prior to 7:40 PM the remaining trains went on sidings at White Hill (377-797), Rossmoyne, Bowmansville, D & M Junc, and Brandtsville, apparently unloading supplies.

(8) No movements observed on the roads in the Starners (351-773)-Aspers (350-767) area[18] during the day. At 4:00 PM a few widely scattered groups of troops and vehicles were observed in the woods about Big Hill (349-771) and Wolfpit Hill (352-769) and clouds of light smoke rising above the woods were noted. Since 7:40 PM south bound traffic has been resumed on the G. and H. R.R., with trains running at 24-minute intervals and unloading troops, artillery, and trains at Starners and Aspers.

(9) No further movements from D & M Junc and Brandtsville toward the Dillsburg area observed during the day. At 5:00 PM infantry and artillery were bivouacked

about Beavertown[14] and infantry, artillery, and numerous animals were observed in the area north and west of Chestnut Grove Church (372-784).[13] At 9:10 PM columns of infantry were moving from these two areas as indicated on Special Map A.[15]

(10) No motor movements of importance have been observed.

(11) Since 6:00 PM the hostile air service has observed extensively over the railroads from Baltimore to York.

(12) At 9:30 PM two columns, both including tractor-drawn artillery and other motor vehicles, were moving southeast from Carlisle as shown on Special Map A.[16]

d. Previous G-2 Estimates.—The last G-2 estimate of the enemy situation was rendered by G-2, I Corps, at 6:00 AM, 4 April, and included all information available at that hour.

3. REQUIREMENT.—*a.* The written G-2 (Intelligence) estimate of the enemy situation, as prepared by G-2, I Corps, at 10:00 PM, 4 April, covering the period from 6:00 AM to 10:00 PM, 4 April.

b. If a statement is made in the "CONCLUSIONS" of the estimate either as to which of the plans open to the enemy is more probable of adoption than the others, or of priority of probability of adoption of plans open to the enemy, write a brief justification therefor. (If this justification is included in the estimate of the enemy situation required by paragraph 3 *a*, above, it may be referred to and not repeated.)

NOTES

1. Solutions will be complete written estimates.

2. Special Map A, *as issued*, may be referred to in the solution.

SECTION II

A Solution

Paragraph
A solution ---------- 4

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4. A SOLUTION.—*a.* The written G-2 (Intelligence) estimate of the enemy situation, as prepared by G-2, I Corps, at 10:00 PM, 4 April, covering the period from 6:00 AM to 10:00 PM, 4 April:

G-2 ESTIMATE OF THE ENEMY SITUATION

I Corps
YORK, PA
4 Apr__, 10:00 PM

Map: G-2 Situation Map, 10:00 PM, 4 April (Special Map A, 1:62,500).

1. SUMMARY OF ENEMY SITUATION.

a. Enemy activities in forward areas and identifications.

(1) *Activities.*

(a) A force, estimated to be the Red 4th Division, advancing from the EBERLYS MILL (380-798) — ROSSMOYNE (377-796) area at 9:00 AM, today, drove in the covering forces of our 1st Division during the afternoon and is now in contact with our position as shown on Special Map A. By 6:00 PM fifteen batteries of the hostile artillery had been located in the area indicated on Special Map A. These batteries have registered on prominent points in the Blue position.

(b) The Red 3d Cavalry (less some small detachments), reinforced by motorized infantry and truck-drawn artillery, estimated to be units from the Red 5th Division, drove our cavalry from BERMUDIAN CREEK to the east of CONEWAGO CREEK during the afternoon and is now holding the west bank of CONEWAGO CREEK as indicated on Special Map A. This operation secured for Red a suitable assembly area and line of departure from which to launch an enveloping attack against the left flank of our 1st Division. The enemy executed extensive reconnaissances west of the cavalry position during the late afternoon.

(c) A detachment, estimated to be a troop or less of the Red 3d Cavalry, is operating north of the unfordable section of CONEWAGO CREEK.

(2) *Identifications.*

The I Corps is undoubtedly confronted by elements of the Red II Corps.

b. Movements, concentrations, and establishments in rear areas.

(1) *Movements and concentrations.*

(a) A force, estimated to be the Red 5th Division, is bivouacked about DILLSBURG (368-784). At dark, 4 April, infantry marched south in four columns from that area as indicated on Special Map A. This force can occupy the line now held by the Red cavalry on our left flank or can attack from that line by daylight, 5 April.

(b) The troops, artillery, and trains unloaded at STARNERS (351-773) and ASPERS (350-767) during the night 3-4 April, are apparently in concealed bivouacs about BIG HILL (349-771) and WOLFPIT HILL (352-769). Detraining in this area was resumed at dark, 4 April. A reinforced brigade can be unloaded in the area by daylight, 5 April, and a complete division by dark, 5 April. However, the railroad capacities available to Red and a consideration of the trains required for supply and evacuation indicate that an entire division will not be assembled in the area prior to daylight, 6 April.

(c) The corps artillery is probably being detrained at CARLISLE where approximately half of its total may have been unloaded prior to dark, 4 April. The entire corps artillery can be detrained in this area by 7:00 PM, 5 April. At 9:30 PM, 4 April

two columns, estimated to be three battalions of medium or heavy artillery, were marching southeast with the heads of the columns six miles from CARLISLE as indicated on Special Map A. The batteries from these columns can support operations along CONEWAGO CREEK by daylight, 5 April.

(d) Troops and motor vehicles have continued to be unloaded at MECHANICSBURG (371-796). These may be corps troops and reinforcing units. There have been no important movements from this area during the day, 4 April.

(e) No additional troop movements or concentrations have been observed.

(f) The hostile air service is maintaining close observation over our rail movements from BALTIMORE to YORK tonight.

(2) *Establishments.*

The enemy's supply and evacuation services are estimated to be operating from stations on the P. and R. R.R. as far west as BRANDTSVILLE (366-788). The number of trains apparently employed in these services has been sufficient to provide adequate ammunition and other supplies for an attack by the troops available at daylight, 5 April.

2. CONCLUSIONS.

a. Enumeration of plans open to the enemy that may affect the accomplishment of the commander's mission.

(1) The immediate occupation and defense of a position between CONEWAGO CREEK and the line: NEIMAN HILL (390-786)—MAYTOWN (384-783)—RJ 504 (378-775). Under this plan the STARNERS-ASPERS force may be employed, as available, to reinforce the defense or to execute a counteroffensive against the Blue left flank.

(2) A coordinated attack with a complete corps. Such an attack cannot be launched earlier than daylight, 6 April and likely not prior to daylight, 7 April. In conjunction with this attack, the STARNERS-ASPER force if detrained by dark 5 April, and moved by marching, can be employed as follows:

Along CONEWAGO CREEK and immediately south of BERMUDIAN CREEKS

A reinforced brigade by daylight, 6 April

A division by 5:00 PM, 6 April.

In the vicinity of ABBOTTSTOWN (373-756) or HANOVER:

A division by daylight, 7 April

If motor transportation is used to move the infantry, it will be possible for Red to employ a division from the STARNERS-ASPERS area in the vicinity of HANOVER or north thereof by daylight, 6 April.

(3) A containing action along CONEWAGO CREEK combined with a turning maneuver toward the southeast.

(4) A limited objective attack with two divisions, supported by at least three battalions of corps artillery, at daylight, 5 April, enveloping the Blue left flank from south of BERMUDIAN CREEK in order to secure the CONEWAGO MOUNTAINS position.

b. A statement as to which of the plans open to the enemy is relatively more probable of adoption than the others.

Plan (4) is considered to be relatively more probable of adoption than the other plans open to the enemy.

Y,
AC of S, G-2

b. A brief justification of the statement as to the relative probability of adoption of the plans open to the enemy:

(1) The Blue position on the dominating Conewago Mountains prevents Red from occupying a position with sufficient depth to adequately protect his vital communications. The wide lateral dispersion of Red's entire force provides no properly disposed reserves and is consequently unfavorable to a defense. The dispositions of the Red 4th Division likewise militate against defensive action. The early appearance of the Starners-Aspers force at an advanced detraining point has sacrified the secrecy essential to a successful active defense.

(2) The existing threat against Red's communications, created by his shallow position and Blue's possession of the dominating Conewago Mountains position; the exposed dispositions of the Red 4th Division; the percentage of his troops required to secure the east flank so long as Blue holds the Conewago Mountains position; the time required for the force being detrained in the Starners-Aspers area to become available to participate in those plans all militate against the adoption of plans (2) and (3).

(3) The dispositions of the Red 4th Division; the suitable assembly area and line of departure secured by the Red cavalry; the reconnaissances executed south of Bermudian Creek; the movements of the Red 5th Division and corps artillery since dark; and Red's present numerical superiority are all favorable to the adoption of plan (4). It is the only plan that offers immediate relief from the threat against Red's communications.

SECTION III

Discussion

	Paragraph
Purpose	5
The preparation of a G-2 estimate	6
A discussion of the solution	7

5. PURPOSE.—This problem illustrates the preparation of a G-2 estimate of the enemy situation by a corps G-2.

6. THE PREPARATION OF A G-2 ESTIMATE.—*a.* The solution given should conform to the outline of a G-2 or S-2

ESTIMATE OF THE ENEMY SITUATION, as given on page 29, FM 30-5.

b. By means of clear, succinct statements of enemy activities, identifications, movements, concentrations, and establishments, the estimate presents to the commander a readily comprehended picture of the enemy situation at the time it is rendered. Nonessentials waste the commander's time and are likely to prove confusing. They should be painstakingly eliminated from the estimate. While the commander is seldom interested in the details of evaluation and interpretation, the estimate should be so worded as to differentiate unmistakably between facts about the enemy and the deductions drawn therefrom. A statement as to when and where troops not in contact can be employed should be included. The local capabilities of units in contact should also be stated if they are not normal to the troops so engaged. The estimate should be accompanied by a map on which the current enemy situation has been plotted.

c. Having presented the enemy situation as a basis for a study of enemy capabilities, the estimate next enumerates the plans open to the enemy that may affect the accomplishment of the commander's mission. This list must include every course of action which the enemy is capable of employing to interfere with the accomplishment of the commander's mission without regard to G-2's own ideas as to the probability or advisability of their adoption.

d. The last subparagraph provides G-2 an opportunity to state which plan open to the enemy is more probable of adoption or to assign priorities to one or more of the plans discussed. Such statements are to be made only when justified by definite information of the enemy's dispositions which favor one or more capabilities and militate against others.

7. A DISCUSSION OF THE SOLUTION.—*a. Enemy activities in forward areas and identifications.*—There is no established line of demarcation between forward and rear areas. The distinction is decided in each case on a basis of convenience and clarity. In this problem the Red units in contact with Blue forces are discussed under *forward areas.*

(1) *Activities.*—(a) The enemy operations of the day are briefly summarized and the hostile dispositions at the end of the period shown on the accompanying situation map.

(b) G-2 determined from a study of the traffic on the C.V. R.R. during 2-3 April that a cavalry regiment and an infantry division could have been detrained at White Hill and Mechanicsburg during that period. Information of the bivouac areas about Eberlys Mill and Rossmoyne during the afternoon, 3 April, again indicated the presence of an infantry division. The march dispositions on the morning, 4 April, confirmed previous indications and G-2 concluded that the Red force was an infantry division. Prisoners from both regiments of the 8th Brigade rather definitely identified the force as the Red 4th Division.

(c) The cavalry operations south of Bermudian Creek are important in that they secured an assembly area and line of departure favorable to a hostile envelopment of the Blue left flank. This fact is stressed in the estimate. Other Red activities south of Bermudian Creek were justifiably interpreted as reconnaissances and demand attention in the estimate.

(2) *Identifications.*—Prisoners from the Red 4th and 5th Divisions and 3d Cavalry justify G-2 in identifying the hostile force west of the Susquehanna River as elements of the Red II Corps.

b. Movements, concentrations, and establishments in rear areas.—G-2's knowledge of the traffic over the two two-tracked railroads west of Harrisburg was a material factor in his deductions as to the enemy's strength and dispositions in rear areas. Red has not been able to conceal the daily movement of approximately one hundred twenty trains into the areas west of the Susquehanna River.

(1) *Movements and concentrations.*—(a) In the solution of this problem a more readily understood picture is presented if these two headings are combined.

(b) Based on his information of the detrainings at D & M Junc, Brandtsville, and Dillsburg, the composition of the detachments moving into the Dillsburg area, the presence of two infantry-artillery teams in bivouacs in the area, and the movements toward the south at dark, 4 April, G-2 estimated that an infantry division was assembled about Dillsburg. A column, readily identified as a reconnaissance detachment, moved from Dillsburg in the direction of the Red cavalry positions at 9:30 AM. At 12:00 noon, the Red cavalry, reinforced by a reconnaissance detachment, attacked along Bermudian Creek. Consequently, prisoners from the Red 20th Infantry, captured during the engagement, justified an estimate that the division at Dillsburg was the Red 5th Division. The commander will desire to know immediately when and where this force can be employed. G-2 determines the answers by applying time and space factors to the road net and the probable force involved. He includes the results in the estimate for the commander's ready reference.

(c) Special efforts have been made to conceal the enemy's activities in the Starners-Aspers area. G-2 has but little information on which to base an estimate of this force. Since an enemy division from this area may develop into a most serious threat against the operations of the I Corps, G-2 indicates the maximum rate at which troops can become available in the area. However, with the unloadings in progress at Mechanicsburg and Carlisle, the only trains available to Red for supply and evacuation are those being employed on the G. and H. R.R. south of Carlisle Junc during the hours of darkness. Practically that number will be required for current supply and evacuation and the building up of reserves for the fighting which is inevitably at hand. Therefore, having warned his commander of the enemy's most dangerous rate of detrainment, G-2 informs him of this indication that a less rapid assembly in the Starners-Aspers area is likely.

(d) Artillery and tractors are being unloaded at Carlisle, indicating the arrival of medium or heavy artillery, or both. At 9:30 PM, two columns, estimated from their composition and length to be three battalions of medium or heavy artillery, were marching southeast from Carlisle. G-2 is justified only in drawing attention to the possibility that this is the corps artillery. From known traffic density, thirty trains each twenty-four hours, he can make a fairly reliable estimate as to when corps artillery from this area can become available.

(e) The situation at Mechanicsburg is even more vague. G-2 can only state that his information is not inconsistent with a supposition that corps troops and reinforcing units are being detrained there.

(2) *Establishments.*—Normally something will be known of the enemy supply and evacuation establishments and frequently that information will be of material service in determining the enemy's strength and dispositions. In this situation, the available information as to Red's supply and evacuation services is important in that it indicates that adequate ammunition and other supplies for an attack can be accumulated in the area by daylight, 5 April.

d. Conclusions.—(1) G-2 considers the mission of his commander and lists all plans open to the enemy that will affect its accomplishment.

(2) To accomplish its mission the I Corps must advance far enough north to prevent traffic across the Susquehanna River at Fort Hunter and Harrisburg. Obviously, a successful defense by Red on his present line or on a position a short distance in rear thereof as well as any offensive action which forces Blue to retire in a southerly direction will defeat the I Corps' mission. If Red undertakes the offensive action of which he is physically capable he will, of course, eventually commit his entire force to the effort. Several forms of coordinated attack will then be possible, each one requiring separate consideration. However, at present, the Blue commander is chiefly interested in knowing whether Red will attack at once with the forces at hand or delay offensive action until his entire force is available to participate. Red is also capable of avoiding decisive action on the Conewago Creek line and undertaking a daring turning movement in the direction of Blue's communications.

(3) For a statement of the plans listed see paragraph 4 *a*, Section II.

(4) After studying the hostile situation in connection with the plans listed G-2 concludes that plan (4) is relatively more probable of adoption than the other plans open to the enemy.

d. A brief justification of the statement as to the relative probability of adoption of the plans open to the enemy.—(1) Red has expedited the arrival of his corps by utilizing practically all available detraining points. In doing so he has sacrificed considerable flexibility by a wide lateral dispersion of his forces in the close proximity of the area in which he has contacted Blue.

(2) A critical factor in his present dispositions is the vulnerability of his communications. He must depend on the bridges at Harrisburg and the roads and railroads into Lemoyne for the supply and evacuation of his forces. Blue's Conewago Mountains position completely dominates Red's east flank and is located so near to the Lemoyne area that a very slight advance by Blue in that direction will bring the vital bottleneck of Red's communications within artillery range. In addition to constituting an immediate threat against Red's continued operations west of the Susquehanna River, this vital and vulnerable east flank limits his powers of maneuver by immobilizing an excessive percentage of his troops in the essential defense of that flank.

(3) The Red 4th Division, with its artillery massed close in rear of his front line, is in contact with the Blue main line of resistance. The division's position has not been strengthened by defensive works and is exposed to direct observation and fire from the dominating Conewago Mountains position. Its successful defense is highly uncertain and its continued occupation will likely be costly in casualties.

(4) Red will have a numerical superiority in infantry of 2 to 1 and the additional advantage of three battalions of corps artillery at daylight, tomorrow. Thereafter the ratio will become more and more unfavorable to Red.

(5) The foregoing factors in the Red situation were applied to the plans open to the enemy as indicated in paragraph 4 *b*, Section II.

"A general may then employ with the same success, for battles, the offensive or defensive system; but it is indispensable to this effect:

"1st. That, far from limiting himself to a passive defense, he should know how to pass from the defensive to the offensive when the moment has arrived;

"2d. That he should have a sure coup d'oeil and much calmness;

"3d. That he command troops upon whom he can count;

"4th. That in retaking the offensive he should not neglect to apply the general principles which woud have presided over his order of battle, if he had commenced by being the aggressor;

"5th. That he direct his blows upon the decisive points."

—Jomini.

Special Course at the Command and General Staff School

The course now in progress at the Command and General Staff School is based upon seven hours of instruction Monday through Friday and three hours on Saturday, giving a total of approximately 316 hours for the two month period, December 2, 1940 to February 1, 1941. This does not include compulsory physical exercise, four hours of which are prescribed for each week.

The course has been framed to include an introductory period (77 hours) of conferences and lectures during which preliminary instruction is given to fit the student officers for the work that is to follow, to acquaint them with the functions of the Special Staff and to cover such basic principles and doctrines as are necessary for all general staff officers.

This introductory period is followed by the main part of the course consisting of applicatory exercises in which the general staff features are emphasized rather than the command feature. Map exercises are being used as the vehicle for teaching the practical work of general staff officers in all phases of military operations.

During the first part of this series of exercises, all students perform jointly the tasks of each of the general staff sections. During the rest of the series, the class is divided into groups, each group specializing in the appropriate work of its general staff section.

The course also includes a series of exercises designed to give technical and special instruction pertaining to the various sections of the staff which cannot be well given in connection with the map exercises and to cover those phases of staff work which are not connected with tactical situations.

One one-sided map maneuver, three two-sided map maneuvers and two field exercises (tactical rides) are included to emphasize the practical application of the instruction received.

A reasonably accurate record of the student's proficiency will be kept as a result of informal tests on various phases of the student's daily work in connection with the applicatory exercises.

The allotment of hours for this course is as follows:

Introductory Period	77	hours
Applicatory Exercises		
Map Exercises (Joint instruction)	131½	hours
Map Exercises (Specialist instruction)	31	hours
Technical Instruction	12½	hours
Map Maneuvers	56	hours
Tactical Rides	8	hours
TOTAL	316	hours

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BOOK REVIEWS

J'ACCUSE

By André Simone

354 pages . . . New York: The Dial Press

Reviewed by Captain M. R. Kammerer, Infantry

With a high Court sitting at Riom, France, trying those responsible for starting what turned out to be the French debacle, the appearance of André Simone's book is most timely. The Riom Court will convict, but it is highly improbable that it will convict those who, according to this eminent French journalist, brought about the downfall of France.

For seven years, starting with Hitler's rise to power in 1933, democracy in France suffered from internal disorders that grew worse instead of better as a result of activities by individuals or groups who, consciously or unconsciously, were playing right into Hitler's hands. For, remembering Clauswitz' theory that "A great European country of civilization cannot be conquered without the help of internal disunity," the Germans fully exploited these dissensions in the French army, in French industry and in French politics.

According to M. Simone, many of the French military leaders—Foch, Pétain and Weygand among them—"never considered the Republic a form of government worth fighting for." They permitted the Maginot line to permeate the army with a "Maginot spirit." They permitted memories, memories that dated back further than the Republic, to overpower imagination.

The author has prepared a strong indictment of the French political leaders of both Right and Left tendencies. Pierre Laval and, next to him, George Bonnet are severely condemned for their contributions to the run-down condition of France in recent years. Many other politicians and leading figures come in for their due share of criticism.

Will the Riom Court, set up by Pétain and Laval, fasten the guilt on the responsible parties? M. Simone thinks not for after all, "The Pétain government is nothing but a creature of the Nazis. And as such it acts."

WHERE THEY HAVE TROD

By Lieutenant Colonel R. Ernest Dupuy

424 pages . . . New York: Frederick A. Stokes Company

Reviewed by Captain M. R. Kammerer, Infantry

Weaving his presentation around the careers of West Point's three outstanding educators, Colonel Dupuy contributes a fascinating chapter to West Point lore——"lore" in its archaic as well as in its modern sense. For *Where They Have Trod* is the story of the development and influence of West Point's system of education besides being a record of its alumni, its customs, its early difficulties, its survivals, and its legends.

Many readers will be familiar with the military accomplishments of West Point graduates in the wars of the United States, beginning with the War of 1812. Fewer readers will be familiar with the accomplishments of its graduates in the more peaceful pursuits. And it is quite probable that but a very small percentage of the graduates themselves are acquainted with the history of the background that produced these graduates.

The story of Sylvanus Thayer, "Father of the Military Academy," has never before been presented so completely and so accurately for the author has had access to letters and documents hidden from the public for more than a century. When Thayer, class of 1808, went to West Point in 1817 to take over the reins, he found little to encourage him, for the Military Academy, during the first sixteen years of its existence, had had a checkered and a none too satisfactory career. But from the day of his arrival, Thayer started to develop a system of education, a system of discipline, a system of honor that have changed little during a century that brought nothing but change to all else. West Point, then as now, had its critics whose attacks served to strengthen rather than weaken Thayer's convictions and position.

The story of the Military Academy, following Thayer's resignation in 1833, revolves around Dennis Hart Mahan, number one man in the class of 1824, who returned in 1832 as Professor of Civil and Military Engineering "and of the Art of War." A staunch and vocative defender of West Point, he devoted himself entirely to its cause and to the continuation of Thayer's principles. "This sharp-featured little professor," whose son was to become much more celebrated than he, "was probably one of the greatest military minds produced in this country." His book, *Outpost*, written 90 years ago, would appear to have been the basis of the modern Nazi conception of warfare. "Speed is one of the characteristics of strategic marches. . . . No great success can be hoped for in war in which rapid movements do not enter as an element. . . . In the presence of an enemy who having lost his communications is entirely disorganized and demoralized. . . . We have only to throw our forces into the midst of these broken-up fractions to determine them to fly." These quotations are from the pen of a man who "never saw a battle—and never went for a walk without an umbrella."

Peter Smith Michie, the last of the triumvirate, graduated in 1863 and was a brevet brigadier general two years later. In 1867 he returned to West Point as assistant to Mahan, whose place he took upon the latter's death in 1871. He wrote many text-books and gained an enviable reputation throughout the country as an educator. As leader of the professorial group at the Military Academy he carried on the principles of Thayer and Mahan which he believed "to be the governing principles of all sound education."

No system is perfect, nor is West Point's system an exception. Colonel Dupuy's book is an answer to the critics of the Military Academy—the severest of whom are graduates. Changes in the curriculum become necessary from time to time. Thayer admitted that. But improvements in the methods of developing and educating officers for the army will only be attained when someone appears who has the combined attributes of a Thayer, a Mahan, and a Michie.

WHY ENGLAND SLEPT

By John F. Kennedy

231 pages, and appendix . . . New York: Wilfrid Funk, Inc.

Reviewed by Lieutenant J. J. Gleason, Infantry Reserve

When one engages, as so many of us now informally do, in a discussion of why England slept, there is the danger of falling victim to opposite errors of extremism. The first extreme, though a very obvious one, has an unfortunate prevalence by reason of its connection with basic human reactions. It is the idea that, whenever a nation suffers a catastrophe relating in greater or less degree to the governance of the land, the political leaders of the time and place ought to be snatched up, one and all, irrespective of guilt or innocence, and thrown under the feet of the elephants. In fine, those whose thought runs in this fashion would tend to do in the circles of policy what our law refuses to do in the courts: hold men responsible for mistakes of delicate judgment committed in respect of matters about which reasonable men would, and do, reasonably differ.

At the other end of the scale there is a second form of extremism—an extremism subtle to the point of undiscernibility, since its essence is an unrealistic excess of moderation. This false moderation is simply the reluctance, and sometimes the refusal, in the face of indisputable evidence, to visit upon responsible political leaders the criticism which their actions deserve. It is a sort of "spare the rod" policy applied to governmental affairs, and it is likely to spoil the statesmen. It stems from the deftly assumed premise—which upon examination proves profoundly disturbing—that the statesmen of a democracy can and must only *follow* the people whom they govern and never *lead* them in connection with important national concerns, the result being that such statesmen, incapable of action as free agents, can scarcely be held to an accounting when things go wrong.

Now, John Kennedy's book is a sincere and scholarly piece of work. The painstaking research that went into it would do credit to men of twice Kennedy's age and experience. For facts and figures on British rearmament an interested inquirer could hardly do better than to consult *Why England Slept*. Despite which circumstance, one lays it down with a sense that its proportioning of causes of British unpreparedness might have been much more accurate, even on the basis of the facts and figures which the author himself sets forth. It is hard to avoid thinking that the writer is one of the indulgent extremists hereinbefore mentioned; that he has minimized, and, as often, overlooked, such elements in the British unpreparedness equation as party maneuvering and a highly questionable political leadership. That a nation's policy moves in deep grooves of popular feeling and fixed ideas is a fact which can never for a moment be denied; but are not a people entitled from their elected representatives to the full disclosure which may serve to alter their views in a crisis? Certainly, the thesis that England was fatalistically predestined to military impotence is one that will not stand inspection.

These observations having been set forth, full acknowledgment should be made of the fact that *Why England Slept* is an intelligent book and a valuable book. It will be a dependable source volume for those who want data on Britain's drift into the war; and it will be the bane of those happy-hearted disputants of whom it has been said that "they enjoy talking about subjects they don't know, because then they aren't bothered by facts!"

THE STORY OF THE PACIFIC

By Hendrik Willem Van Loon

384 pages . . . New York: Harcourt, Brace and Company

Reviewed by Lieutenant J. J. Gleason, Infantry Reserve

Hendrik Willem Van Loon, as his host of contented readers will attest, is, in addition to being the most painless and imaginative popularizer of geography yet to take the field, a sage, friendly consultant on just about any topic human or divine. He cannot wander from the point when he writes, because, with disarming unpretentiousness, he has taken all knowledge for his province in the first place. And long may his generously governed literary empire thrive! When Mr. Van Loon takes us by the hand and begins to ramble along so pleasantly over his miscellany of ideas, with a touch of sociology here, a little story there, just the right amount of ethnology, and some historical tidbits thrown in, it would be more than heartless—both to him and to ourselves—not to follow wherever his fancy leads. A few hours with Mynheer Hendrik are good for anyone.

The Story of the Pacific is, in the best Van Loon manner, a refreshing geography-history-biography-travelogue of the ocean, its lands, explorers, governments and inhabitants. The book does something to us that is strange and wonderful. Quietly, slowly, it kindles the slumbering coals of a once vivid literary memory. Before we realize what is happening as we drift along, there begins to steal over us again the magic of the word "Panama" and we are dwelling among those old stories our boyhood taste devoured. Thoughts of the "Seadogs" rise once more—Drake, Hawkins, Frobisher and Morgan. Hot sun burning down on the sands of an ocean inlet, while within, silently crouching for the spring, the tense little sloops of the raiders. Unaware, slowly plodding around the point, the great Spanish galleon, gold laden from Peru, with her triple tiers of heavy caliber guns, her oars dipping in rhythm, the burnished morions of her soldiery flashing back the sun, and some proud, dark grandee of Castille pacing her quarterdeck. Then the signal—the swift rush of the attackers—the crash and flame of batteries hastily manned; and the drive of the "Seadogs" through the smoke to get in beneath the Spaniard's guns! Well—fond memories, those! And Mr. Van Loon has a way of bringing them back to us.

GUILTY MEN

By "Cato"

144 pages . . . New York: Frederick A. Stokes Company

Reviewed by Lieutenant J. J. Gleason, Infantry Reserve

Elsewhere in this section we find a critical evaluation of *J'Accuse,* André Simone's indictment of the French statesmen who, wittingly or without premeditation, contributed over a period of years to their country's downfall. *Guilty Men,* by one "Cato," whose identity is a question that has been titillating observers of current foreign affairs, is the British counterpart of the French indictment. It is a bitter and brutal document, none too well drawn as an over-all charge, but devastating as a bill of particulars. The anti-Tory case has probably received more orderly exposition elsewhere; but it has yet to claim so savagely factual a presentation as this one seems to be. Like the old Cato whose name he borrows, the author would scarcely qualify as a model of restraint; nor is a restraint a virtue he cultivates. Rather, he spurns it in the best Philippic tradition, actuated by the belief that, for the statesmen whom he holds to have sold out Britain, mayhem is far too good a fate entirely.

Pacifist Laborites, a sprinkling of Liberals, and an appallingly incompetent Conservative clique teamed with one another, argues the writer, to reduce Great Britain from an empire whose sinews, toughened by victory, could meet force with force to a forlorn military invalid dependent for support upon a harassed ally across the Channel. The saboteurs were alike in their vices: partisan selfishness, personal ambition, congenital lassitude, outright stupidity. Their tactics: vacillation, betrayal of allies, deceit in the treatment of their own constituencies. The upshot: an unprepared empire now fighting for sheer life against a feldgrau Juggernaut that has been, openly, seven years in the building.

Such arraignment is deadly; and the anecdotes are the tools that do the work. There is the story of Churchill's comment on the significance of Chamberlain's personal negotiation with Hitler. "At Berchtesgaden", said Churchill, "£ 1 was demanded at pistol point. When it was given (at Godesberg) £ 2 were demanded at pistol point. Finally (at Munich) the dictator consented to take £ 1 17s.6d. and the rest in promises of goodwill for the future." There is Lloyd George's quip to the effect that Sir Samuel Hoare, when the Ethiopian "deal" was aired, made a speech so abject that it sounded "like a scivvy asking for a reference." And the incident of another legislator, who, upon being told of Inskip's appointment to the post of Minister of Defense, said: "It is a clerical error." Yet the penetrating wit of an eminent minority fell, blunted, from the tough hide of the Conservative machine; Churchill, backed though he was by the government's own intelligence services, met only derision as a sort of frenzied sibyl; and England, month after month, lagged further behind in the race for guns, and trained soldiers, and planes. Finally—the deluge!

Thus, for conviction or acquittal, "Cato" brings English statesmen before the bar of public opinion to face an unsparing prosecution. It is for the reader to sit in judgement and examine the evidence adduced. In justice, let it be said, a defense should be heard, and a verdict rendered only after due deliberation. Certainly, whatever the outcome of the dispute, there will have been no lack of mental and emotional stimulation.

THEY WANTED WAR

By Otto D. Tolischus

340 pages . . . New York: Reynal & Hitchcock

Reviewed by Captain M. R. Kammerer, Infantry

They Wanted War, based on despatches the last of which won for their author the Pulitzer prize for distinguished foreign correspondence in 1940, is a coherent, accurate, vivid picture of Nazi Germany. That Mr. Tolischus, despite his eviction from Germany, has painted a not unfavorable picture of the Third Reich is attributable to the surprising development and unification of Germany he witnessed during his years there as correspondent.

The rise of National Socialism was due to a clever combination of propaganda, at which Hitler is a past master, and force. And the greater of these was propaganda which mobilized millions while force was crushing the few antagonists. The continued strength of National Socialism depended on the willingness of the German people to follow Hitler's lead, a willingness that has become inevitable due to the leader's political and economic powers. "Few men dared to bite the hand that fed them."

In preparing for the present war, the German nation over a period of years has been converted into a "living juggernaut of Mars." It was, beyond a doubt, hoped that war would be avoidable, but if force should become necessary in order to unleash the shackles of Versailles Germany was to be ready with the world's mightiest military machine. This machine is the product of:

"The psychological mobilization of the German peoples . . . which produced a hard, fanatical and unscrupulous fighting generation.

"The superior military enterprise and ingenuity of the German army command.

"The economic mobilization" of the nation's resources.

They Wanted War, in warning the United States to face facts, gives as adequate a conception as has appeared of the capabilities of Nazi Germany.

I SAW FRANCE FALL

By René de Chambrun

216 pages . . . New York: William Morrow and Company

Reviewed by Lieutenant J. J. Gleason, Infantry Reserve

A distinguished and intelligent young Frenchman here submits a first hand account of the military collapse which six months ago brought ruin to his native land. In this volume there is little of the theorizing from afar that has characterized so many analyses of the May breakdown. As a lieutenant and captain of infantry, de Chambrun saw active service throughout the war, initially in a Lorraine fort of the Maginot Line, later as liaison officer with various brigades of

the British Expeditionary Force in northern France. The author's relationship to Laval and his friendship with Pétain and Weygand led to his being a participant in some interviews and conversations with those leaders, which, though brief and briefly recounted, are unforgettable glimpses of the French military crisis and the problem that now confronts the conquered state.

The book is no carefully organized treatise, prepared for the purpose of identifying and weighing the numerous factors that made for French defeat. Rather, as the title indicates, it is a spectator's picture of swift, tragic events—a personal narrative of a war which was idle in its beginning, savagely kaleidoscopic in its climax and end. Such casual analyses as appear are the breathless reflections of a soldier who, serving loyally and doing his best, sees a magnificent army and a great nation run down like sand around him.

Though the lapse of time has been so short as to lead one to believe that the author must necessarily have written in haste, the book seems to suffer from none of the defects ordinarily growing out of such a disagreeable situation. It is good narrative, clearly told and well proportioned. The style is precise; the descriptions deft and vivid. No military reader, for instance, will fail to react to de Chambrun's account of a lightning raid upon a Maginot outpost, executed with clockwork precision by a platoon of German elite infantry. Or to the author's jolly experience with two successive Highland majors, each of whom, when separately asked to list the ten best regiments in the British Army, gave de Chambrun a group of *nine* Scottish regiments and *one* English regiment; the only difference in the choices being that each major, unaware that the other had undertaken a similar selection, put his own particular regiment at the head of the list and the other's regiment last! Then there is a pitiful picture of the hasty evacuation of a little village in Lorraine between the Ziegfried and Maginot Lines at the time when hostilities were beginning; and a surprising story of the effectiveness of Fifth Column agents in frightening the civilian population into a headlong flight which blocked vital military highways. Indeed, such systematic terrorization for the purpose of congesting the arteries of military movement is, in de Chambrun's opinion, nothing less than Hitler's vaunted "secret weapon."

Another passage one will not soon forget is Weygand, newly called to command, explaining the somber implications of his situation by saying:

> " . . . Between Sedan and the sea my predecessor had a front of two hundred kilometers behind which France, in the line and in support, had three of her largest armies, the First, Seventh, and Ninth, the twenty-five Belgian divisions and the ten divisions of the British Expeditionary Force. Today I have a front stretching from Montmedy to the Channel near Abbeville, three hundred kilometers long—and not one man from any of those units is in line . . . "

Turning to the author's comments upon the causes of the defeat, the reader will follow him in much, but will note in some respects a basic limitation of outlook. There can be no disagreement, of course, with his criticism of the defensive psychology, with his picture of a state of mind so passive that practice maneuvers before the war simply trained out of the French soldier a fine natural elan and a great tradition of attack. But his observations respecting the dearth of aircraft, tanks, and necessary weapons of like nature are noticeably tinged by his political opinions and by the eminent attachments referred to above. De Chambrun explains the shortage entirely as a failure of production, due to a civilian unwillingness to work. Sources more objective ascribe it somewhat to that, but, more culpably, to a failure of requisition—to the short-sightedness of high command which, as a corollary of its own defensive myopia, saw no value in the destructive power of attack aviation and the blinding shock of tanks launched en masse. To shift the balance of the blame, however slightly, is to obscure the lesson.

The author is convinced, and fervently asserts, that his France, out of all her disasters, will rise and live again; and there is no reader but will feel instinctively a sympathy with that hope, so gallantly voiced and sincere. Yet the path to the sunrise has still to be mapped out. And one distrusts the Vichy formula upon which de Chambrun quite mystically relies. It is true, as he points out, that France through seventeen hundred years of the last nineteen centuries of her existence has been, in whole or in part, under the sway of some hostile invader. Nevertheless, that generality, bred of an age of less scientific wars and of the old potentialities of guerrilla resistance, seems ill related to the cold actualities of the present occupation. We are still left with the problem. What good will negotiation bring, when that parley is between an armed victor on the one hand and a weaponless people on the other?

At any rate, for genuine pleasure of reading one cannot afford to pass this little volume by. It is full of action; it moves fast; and it has the warm attractiveness of eyewitness writing. One will search far for better narrative than this little book by a soldier of France.

PISTOLS AT TEN PACES

By William Oliver Stevens

285 pages . . . Boston: Houghton Mifflin Company

Reviewed by Lieutenant J. J. Gleason, Infantry Reserve

Mr. Stevens has prepared a fascinating and hitherto unchronicled chapter for the curiosa of our national history—the story of the reign of the code duello in America, a record of the days when matinal pistols cracked at Bladensburg, and New Orleans' "Duelling Oaks," on "Bloody Island" in the Mississippi off St. Louis, and in every spot, in fact—with the exception of sensible New England—where words might carelessly be spoken or hard looks exchanged. It was a bloody and fantastic era, when a system of private execution, blessed by public approval and decked out in a ritual as nice as any to be found among social ways, threatened well nigh to depopulate the American South and West. As we turn the pages of *Pistols at Ten Paces* we are alternately amazed by each lusty passage of arms and depresed by the thought that in those days an indispensable precaution before moving in respectable circles must have been to have one's self measured for a wooden overcoat.

The heyday of duelling in the United States was from 1800 to 1850. Outspoken condemnation of the practice by such men as Washington, Jefferson and Franklin did nothing to stop its subsequent astounding rise. It became a kind of folk mania, sweeping the land from Pennsylvania to Texas, and every stripling scarce able to lift a pistol must needs show his mettle by picking a quarrel and "calling out" a friend. In France in the seventeenth century, Richelieu had outlawed the duello, and had proved he wasn't fooling by promptly beheading the Comtes de Bouteville and des Chapelles who had taken part in one—a development which severely discouraged the art there; but in America the anti-duelling laws of the early 1800's were a dead letter from the day of their enactment.

The author tells of famous encounters that took place: Hamilton's death on the heights of Weehawken at the hands of Aaron Burr; Stephen Decatur's duel with Commodore James Barron; Jackson's killing of Colonel Dickinson; the engagement between John Randolph of Roanoke and Kentucky's Henry Clay. And of renowned duellists: Alexander Keith McClung of Mississippi, the deadliest of them all, who brought down fourteen opponents in the encounters of which we have record and finally blew his own brains out in his forty-fourth melancholy year; Seargeant S. Prentiss, the emigré from Portland, Maine, who at the drop of a hat would shoot it out with anybody—excepting, of course, McClung; Tom Benton, later Senator from Missouri, who never touched a duelling pistol after his killing of young Charles Lucas.

The book is full of unusual and little suspected facts with respect to American duelling. For instance, that for sheer statistical and instrumental deadliness it far surpassed anything in Europe. That formal duelling was done, not alone with the pistol as the weapon, but in addition with rifles, shotguns, rapiers, broadswords, dirks, or any combination thereof. For many years the sword held sway among the duelling circles of Gallic New Orleans, but was supplanted at last by the destructive powder and ball. In 1843 in France two original minded paladins fought a duel in a room with *billiard balls*, and one killed the other on the first pitch! On another occasion a challenged Texan, having the right to choose the arms and the distance, laughed the hot-headed challenger out of town by prescribing that the duel be fought from opposite banks of the Rio Grande River with howitzers as weapons!

It will become obvious, therefore, that *Pistols at Ten Paces* is no slow-moving survey of the field. It is exciting and it is witty, in a style similar to no one so much as rollicking Gene Fowler. Little current writing can measure up to the entertainment value of this tale of "hot words and hair triggers."

THE RED ARMY

By Erich Woolenberg

Translated from the German by Claud W. Sykes

401 pages . . . London, England: Secker & Warburg

Reviewed by Captain M. R. Kammerer, Infantry

This book may not prove particularly valuable for those who want a description of the Red Army as a military structure or of its armament and tactics. However, for those who are seeking an account of the growth of the Red Army, its political history and leadership, much interesting information is made available. The book, partially published two years ago, has been brought up to date by the inclusion of recent developments and the Finnish campaign. Although once a member of the Red Army, the author appears to be anti-Stalin, and his impressions of the Soviet forces may possibly be a bit prejudiced.

The author's hero is the young Guard's officer Tuchachevsky, who commanded so capably against Kolchak and Denikin, though completely routed by Pilsudski in the Polish campaign. Tulchachevsky, a dreamer and theorist, was nevertheles a resolute commander in the field. He was a tactician of enlightened views and is said to have originated parachute tactics. Like so many others, Tuchachevsky was a victim of one of the purges that have prevented the Soviet Army from making more rapid progress. As a matter of fact, the author believes that the Red Army has been moving in a rut, that it has lost its original revolutionary ardor.

The author is very hostile in his treatment of the Finnish campaign and states that "the successful stand of the Finnish Army has already destroyed the prestige of the Russian Army, and, with it, that of the Stalin régime."

The close connection betwen the Russian and German General Staffs is clearly brought out. Records of correspondence between German and Russian officers were used as evidence to bring many senior officers before the firing squads during the purge, though actually this correspondence was inspired by the Soviet government.

That the Red Army, despite the fine fighting qualities of the Russian soldier, is ready for a large-scale campaign the author does not believe, but he thinks that "with the cooperation of German officers, engineers and technicians" many of the weaknesses could be ironed out and a first-class army developed.

The book is well documented with the Russian and German side. Failure to consult British or American sources resulted in the mistake of citing General Miller rather than General Ironsides as the commander of English and American forces at Archangel and Murmansk.

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BREAK-THROUGH TANKS. WILL THEY BRING FREEDOM OF ACTION TO ARMORED DIVISIONS? Captain C. R. Kutz

ARMY QUARTERLY (Great Britain)

October 1940

LA DÉBÂCLE—1940. Lieut. Colonel de Watteville
DEFENCE AGAINST NIGHT BOMBARDMENT. THE PROBLEMS OF YESTERDAY AND TODAY. Major T. R. Phillips, U. S. Army
TWO GENERALS—ONE DOCTRINE. (Von Seeckt and De Gaulle) Major E. W. Sheppard
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September-October 1940

BLITZKREIG: ILLEGITIMATE SON OF MARS. Major Hargreaves
GENESIS OF MODERN WAR. J. E. Kelly
WAR EXPERIENCES OF TANK COMMANDERS
THE U. S. ARMORED FORCE. THE POSSIBILITIES OF ITS STRATEGICAL AND TACTICAL EMPLOYMENT. Lieut. Colonel Black

CAVALRY JOURNAL (Great Britain)

October 1940

GENERAL DE GAULLE'S DOCTRINE OF WAR. Major E. W. Sheppard
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CHEMICAL WARFARE BULLETIN

October 1940

THE CHEMIST'S ROLE IN NATIONAL DEFENSE. Captain G. Garber, CW-Res
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AIR RAID DEFENSE PUBLICATIONS. Lieut. Commander H. Wells, CEC-V(S) USNR

COAST ARTILLERY JOURNAL

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A FIELD AA SUPPLY OFFICER. Captain Gill
FIRE AT HIGH-SPEED MANEUVERING TARGET. Major Nicholson
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THE STORY OF ARTILLERY THROUGH THE AGES. W. A. Windas

FIELD ARTILLERY JOURNAL

September-October 1940

MOUNTAIN WARFARE. Lieut. Colonel Griffiths
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FIGHTING FORCES (Great Britain)

August 1940

GREAT BRITAIN STANDS ON HER OWN. By The Editor
THE WAR IN THE AIR. An account of British air action in all theatres of war from 1st June to 5th July. Major Turner
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THE BATTLE OF FRANCE. Major General Rowan-Robinson
A CIVILIAN LOOKS AT THE WAR. By "Chu Chin Chow"

October 1940

NOTES ON GERMAN MECHANIZATION. Major General J. F. C. Fuller
THE WAR IN THE AIR. An account of British air action in all theaters of war from 1st August to 8th September. Major C. C. Turner

LA FRANCE MILITAIRE (France)

BY CAPTAIN M. R. KAMMERER, Infantry

10 August 1940

A LESSON: POWER PLUS SPEED.
[Un enseignement: Puissance plus Vitesse.] St. Lemaire

The fundamental reasons for the German successes, from Poland through the Battle of France, were power and speed. Being on the spot first with the strongest forces enabled them to gain complete victories. The military victories were, of course, dependent upon industrial, commercial and political victories all of which were won as a result of the clever coordination of power and speed. The weak and slow, according to the author, cannot survive in the modern world.

17 August 1940

THE ROLE OF THE ARMY SINCE THE ARMISTICE.
[Le rôle de l'armée depuis l'armistice.] By B. P.

Following the armistice, the military authorities assumed many duties in unoccupied France that had previously been administered by civil authorities. The general commanding a military district was made responsible for the maintenance of order within his district. Under him were the department commanders who stationed troops at important industrial centers and food depots. Military commanders were placed in charge of the local police of towns and counties to supervise traffic and maintain order. Two army doctors worked with each of these local commanders to enforce sanitary regulations. They were assisted by the best qualified local doctors. Local commanders were also charged with the demobilization of the troops in their districts.

24 August 1940

THE HEROIC CONDUCT OF OUR GENERALS IN MAY-JUNE, 1940.
[L'héroique conduite de nos généraux en mai-juin 1940.]

As a result of the speed of operations in modern warfare general officers may find themselves in the thick of the fighting rather than in the traditional sheltered headquarters somewhere behind the lines. Many French generals, during the course of the operations in Belgium and in France, found themselves organizing personally strong points and centers of resistance. Lieutenant General Giraud was captured while at the last center of resistance of his army. Major General Bouffet was killed by fire from hostile planes while returning from a tour of inspection of the critical points of his corps' defensive zone. Major General Janssen was killed at his post while attempting, with the remnants of his division, to hold back the enemy during the evacuation from Dunkerque. Major Generals Berniquet and Barde were killed while fighting at the front with their "poilus." Generals du Picq and d'Humieres were killed while inspecting the disposition of troops in their brigade zones. General Moulin was shot and killed while organizing strong points with his troops, despite the danger of being enveloped. Brigadier Generals Corbe and de Prevaux were surrounded by the enemy, but they succeeded after several harrowing experiences and several days of marching in getting back to unoccupied France.

31 August 1940

AIR TROOP LANDINGS.
[Les débarquements aériens.] General A. Niessel

Although the organization of air troop units is still in an experimental stage, it should be apparent that such units will, in the future, play an important role in military operations.

A typical Soviet air troop unit in 1939 included 900 men, armed with 4 pieces of artillery, 6 mortars, 8 antitank guns, 2 antiaircraft guns, 18 heavy machine guns and 64 light machine guns. The total weight of personnel and matériel was 330 tons which required 115 transport planes. Taking off from different fields to insure secrecy, these planes would be accompanied by pursuit ships.

The first precaution to be taken against such a force is the organization of a permanent "alert" system equipped with an efficient means of communication. The next step is the organization of strong, well-equipped units capable of being moved promptly and rapidly to any threatened area. At important centers, such as airports, railroad centers, ports and industrial areas, these units should be of a permanent nature and should be particularly well trained to combat any possible emergency.

14 and 15 September 1940

EXPLOITS OF THE FRENCH FORCES IN THE SOUTHEAST.
[Fait d'armes francais dans le Sud-Est.] By P. B.

The entry of Italy into the war against France and England was an anti-climax in which the military operations were completely obscured by what had preceded. This article, though too general to be of much value to a military student, does give, nevertheless, an idea of the difficulties of offensive warfare in mountainous terrain.

From the Swiss frontier to the Mediterranean the French had to defend their Italian frontier with 3 infantry divisions and approximately an equal number of fortress troops. Italian troops opposed to these were estimated at 24 infantry divisions and 8 alpine divisions. Of these 32 divisions, 19 are known to have been engaged in the Italian offensive. Except in the southern portion of the line, the Italians were unable to advance beyond the outpost positions of the French defenders.

The 66th Division held the northern sector of the frontier which extended over a distance of 60 miles. To the south was the 64th Division which withstood the assaults of 5 enemy divisions and captured 500 prisoners as well as many automatic weapons and mortars. On the right of the line were the 61st and 58th Regiments of Alpine Chasseurs who halted the main efforts of the enemy.

In addition to the frontal efforts made by the Italians, General Olry, the commander of the Army of the Alps, was threatened from

the rear by the rapidly advancing German forces which had encountered no resistance since leaving Champagne. He hastily organized and armed forces of old and young men for the defense of the towns and important roads to his rear since his own reserves had been depleted by the demands for more troops to stop the German drive in the north. The armistice was signed before any severe damage had been done to his defensive organization.

21 September 1940

AVIATION AND THE OUTCOME OF THE WAR.
[L'aviation et la decision de la guerre.] General A. Niessel

Aviation has contributed immensely to warfare on land and on the seas, and its value as a military factor is definitely established.

Against terrestrial objectives, aviation can reach with machine guns or bombs many targets that would be inaccessible to artillery fire because of range or of masks. It can operate over hostile territory at points where the necessary concentration of antiaircraft weapons is difficult if not impossible.

The naval role of aviation likewise is steadily increasing, although the arms and armor of naval vessels have made it possible for such vessels to defend themselves quite satisfactorily. Unarmed vessels are helpless unless escorted in an armed convoy. Embarking or debarking operations are considerably hampered if the threat of hostile aviation is present.

The best defense against aviation appears to be aviation. Of planes brought down in recent European campaigns, more than eighty percent were destroyed by hostile aviation, and the rest by antiaircraft weapons. Heavy damage has also been done to planes on the ground as a result of surprise attacks on airdromes.

General Niessel concludes his article by stating that while aviation may have a demoralizing effect on the enemy's armed forces and civilian population, it is unlikely that aviation will ever obtain a victorious decision without the energetic and simultaneous cooperation of land forces.

INFANTRY JOURNAL

September-October 1940

THE AMERICAN PROFESSIONAL SOLDIER. Major Burns
ENGINEERS IN THE BLITZKRIEG. Captain P. W. Thompson
THE MONGOL METHOD OF WAR. Harold Lamb
THE MARCH OF THE 26TH. Lieut. Colonel E. Colby
SNUG IN THE SNOW AT FORTY BELOW. Lieutenant Cochran

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS (Great Britain)

August 1940

THE INDIAN HOSPITAL CORPS. Lieut. Colonel Bourke
DUTIES OF A QUARTERMASTER DEPARTMENT IN PEACE. Captain Eves
MILITARY HOSPITALS—CHOICE OF SITE AND DESIGN. Major Walker-Taylor

September 1940

PRACTICAL HINTS ON THE TREATMENT OF WAR INJURIES IN FORWARD AREAS. Lieut. Colonel Atkins

JOURNAL OF THE ROYAL ARTILLERY (Great Britain)

July 1940*

THE WAR OF AMERICAN INDEPENDENCE. (I) Lieut. Colonel Sir George MacMunn
NOTES ON THE PREPARATION AND CONDUCT OF TACTICAL EXERCISES. Lieut. Colonel Brittan

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION (Great Britain)

August 1940

THE OPERATIONS OF THE BRITISH EXPEDITIONARY FORCE IN BELGIUM AND NORTHERN FRANCE
A NEUTRAL VIEW OF THE GERMAN-POLISH WAR. Lieut. Colonel Dinulescu
COAST-ATTACK SHIPS IN THE LATE WAR

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA (Great Britain-India)

July 1940

MILITARY RESEARCH. By "Auspex"
EAST PRUSSIAN INTERLUDE. Captain Knapp

KRASNAYA ZVYEZDA (Russia)

BY LIEUTENANT JOSEPH DASHER, O. R. C.

29 May 1940

THE MILITARY AIR FORCES OF ITALY.
[Voyenno-vozdushniye sily Italii.] Major P. Rolin

The entire Italian air force, civilian as well as military, is under the air ministry. Military aviation is headed by the chief of general staff for air who simultaneously is the assistant minister of aviation. Great care is devoted in Italy to the development of military air forces, particularly to bombing aviation.

Entirely apart from air combat units, the Italian military air forces possess a territorial organization. The country is divided into four territorial air zones, with headquarters in Milan, Padua, Rome and Bari. These zones embrace all details of ground and territorial organization (airdromes, their equipment, protection, etc.). Military air units (excepting escadrilles of army aviation), located in one of these air zones, are organized into air squadrons, which, whenever necessary, may be sent to a different air zone. According to the Italian command such a system of organization insures the greatest mobility of air units, as proven during movements of the air force before the occupation of Albania.

Squadron consists of 2-3 divisions (a division not fully organized is called a brigade). Each division consists of 3-4 regiments. The regiments consist of 2-3 groups, each of which numbers 2-3 escadrilles. An escadrille has 6-10 aircraft.

Italian air forces located in Libya, Albania, Sardinia, Sicily, Ethiopia and on the Aegean Islands, have a separate organization.

The matériel of the Italian air force is obsolete, in a large part, and the speedy replacement with aircraft of most modern type is limited by the economic capabilities of the country.

Italian bombardment aviation is in a relatively better situation.

The basic Italian bombing plane is the tri-motored monoplane Savoia 79. It has a maximum speed of 265 miles per hour, and carries a bomb load of 1,200 kilograms. Of high speed bombers Italy has a small number of craft of the Breda 88 type. This plane, while capable of a speed of 341 miles per hour, has many shortcomings.

Dive bombers are in the process of being adopted. The principal craft of this type is the twin-motored monoplane Savoia 85.

Italian aviation is greatly lacking in pursuit craft. Experiences in Spain have convinced the Italian command of the need for two types of pursuit craft—maneuverable biplanes for veering flights, and high speed monoplanes for sudden attacks. In both respects Italian pursuit aircraft is somewhat obsolete. The Fiat 32, a maneuverable biplane, has a maximum speed of 217 miles per hour, and the Fiat 42 has a maximum speed of 267 miles per hour. Of high speed monoplanes Macchi 200 and Fiat 50 are available, but their maximum speed does not exceed 280-310 miles per hour, which is insufficient. In numerical relation, pursuit aircraft is about 50% of the total number of bombers.

Steps are being taken by the Italian air command to remedy the situation with regard to pursuit aviation.

For reconnaissance missions Italy has the Romeo 37, with maximum speed of not more than 202 miles per hour. Experience of the war in Western Europe shows that such aircraft is most vulnerable to attacks by pursuit planes.

The Italian air force has some special attack aircraft regiments. However, less attention is now being given to them. Apparently, the Italian command has decided that it is more advisable to regard aerial attack operations as just another method of combat utilization of all types of aircraft, and not to form special units consisting of attack aircraft alone.

Italian planes are armed with machine guns of 7.7-mm and 12.7-mm caliber. Bombs of all calibers, up to and including those of 1,000 kilograms, are available. Considerable attention is given to development of the use of poisonous materials in combat, for which Italy has her own supply of raw materials. During the Ethiopian War the Italian air force made wide use of chemical bombs.

The total number of military aircraft possessed by Italy is somewhat over 4,000. There are about 500 civilian planes. In actual service (including the naval aviation) there are not more than 2,500 planes, of which about one-half are bombers.

The Italian aviation industry has created a number of successful types of aircraft and motors. Its monthly production is about 200 planes.

As to raw materials and equipment Italy is largely dependent on imports from other countries. This dependence is even greater in relation to the import of oil. Italy has practically no own sources of oil, and synthetic fuel industry is in a primary stage of development.

The Italian principles of aerial combat have long been under the influence of the Douhet theory of independent aerial war. Actual combat experiences of recent wars, and a sounder estimate of true possibilities, have brought about a certain shift in the operative and tactical opinions of the Italian command. In this regard, of significance are the recent enunciations of General Priccolo, the new chief of Italian General Staff for Air, in which he gives a considerable place to the combined actions of the air force with the ground and naval forces.

Italian antiaircraft defense is entrusted to antiaircraft units (regiments and separate battalions), and to territorial antiaircraft regiments.

The antiaircraft artillery regiment consists of 2-3 battalions of 75-mm guns, and a searchlight battalion. The battalion consists of 2

(wartime strength 3) 4-gun batteries. There is a total of 4 antiaircraft regiments of the cadre, and 22 territorial regiments. Army corps have separate mixed artillery battalions (75-mm Ansaldo, and 20-mm Breda guns.)

30 May 1940

SECURITY DURING THE MARCH THROUGH A FOREST.
[Okhranenye na marshe v lesu.] Colonel B. Safonov

Conditions of modern combat create dangers for the marching column, even though it may be far removed from the region occupied by the enemy. Frequently the enemy will strive to attack the column in order to stop its advance and to create confusion.

The author points out that during the recent Soviet-Finnish conflict, the Finns made good use of the wooded, boggy terrain in order to throw groups of automatic weapon units and snipers against the flanks of the Red army columns.

When there is a lack of roads, when the terrain is marked by forests, when there are many obstacles, demolitions, mine fields, and when visibility is limited, firing at close range is the rule. Therefore the Finns made use of small maneuverable groups for striking against the flanks of Soviet forces, and organized ambushes.

During the march over a single forest road the depth of the advancing column is changed. Main forces are placed close to the security units. Strong security units are thus required. In this connection, all-around security, necessary for the protection of flanks, assumes special importance.

The forests should be combed, off the roads. In dense forests platoons should advance behind machine guns and automatic weapons. Of course, reconnaissance should advance in front and security should protect the flanks. Security should include the company organic mine throwers. A sudden encounter of the enemy at close range is met by the fire of machine guns and automatic weapons. Hand grenades and the bayonet complete the task.

Under such conditions it is advisable to have the forward artillery observers advance with the security units. This facilitates the location of targets and the deployment of artillery for firing.

1 June 1940

THE POSITION OF TANKS IN BATTLE FORMATION.
[Mesto tankov v boyevykh poryadkakh voysk.]
Colonel P. Rotmistrov

It is necessary to abandon the idea that all rifle divisions must be accompanied by tanks. Tanks should not be wasted against targets and in directions of secondary importance.

Tanks should be employed in a mass only. In decisive directions 100 to 200 tanks should be concentrated to one kilometer of the front, and the frontage of the tank attack must not be narrow.

The combat formation of a tank attack should be arranged along the principle of continuity, in waves, echelon after echelon. Tank echelons proceed not less than three at a time—maintaining visual contact, but never further apart than 200 yards. In the first echelon proceed medium tanks, tank-trawlers (mine sweepers), sapper tanks, and tanks with devices for demolishing obstacles. Light tanks advance in second and third echelons. The infantry moves behind them.

Ten minutes after the start of the infantry attack, a new battalion of tanks advances, and this battalion also attacks in three successive echelons, which outdistance the advancing infantry. The third echelon of this tank battalion, after having outdistanced the infantry, gives direct aid to the infantry, by silencing enemy fire.

In such a manner the tank unit will usually support the advance of one rifle regiment, attacking in two echelons along a front of one kilometer. As a rule the tank battalion will advance in width of one rifle battalion (along a frontage of 500 yards), and will attack in three echelons.

ACTION OF GERMAN MECHANIZED UNITS.
[Deystvya Germanskikh Motomekhanizirovannykh soyedineniy.] Captain M. Dimitryev

According to Italian military sources the armament of the German "Panzer" division consists of 5,000 carbines, 220 light machine guns, 500 heavy machine guns, 12 mortars, 27 light mine throwers, 18 heavy mine throwers, 100 20-mm automatic guns and 45 37-mm antitank guns, 4 77-mm field guns, 24 105-mm howitzers, 30 combat cars, 300 light tanks, 160 medium tanks.

The author admits that the above information is somewhat obsolescent, in that it does not take into account any heavy tanks. However, he expresses his doubt of the veracity of press reports as to existence of super-heavy tanks (80-100 tons), which were said to have been employed by the Germans on the Western Front, as in his opinion such tanks would lack the necessary maneuverability.

The "Panzer" division is organized as follows: headquarters, tank brigade consisting of two regiments, motorized infantry brigade, motorized artillery regiment, motorized reconnaissance detachment, motorized signal battalion and sapper battalion.

The following are the principal types of German tanks employed by the "Panzer" divisions:

Light tank weighing 6-8 tons, armor 10 14-mm, armed with one machine gun and one 20-mm gun.
Medium tank weighing 18-20 tons, armor 20 25-mm, armed with two machine guns and one 75-mm gun.
Heavy tank weighing 30-35 tons, armor 35 40-mm, armed with three machine guns, one 37-mm and one 75-mm guns.

During the Polish campaign the German Army had about 8 "Panzer" divisions, and at present has about 12 such divisions.

2 June 1940

ARTILLERY FIRING POSITIONS IN THE MOUNTAINS.
[Ogneviye pozitsii artillerii v gorakh.] Major S. Degelov

Large amounts of dead space in the mountains complicate the selection of firing positions and the organization of observation. This requires, above all, supplementary means of reconnaissance. In especially difficult mountain conditions the battery will require a second fire patrol. After executing their tasks the patrols should assemble at an appointed place in order to report to the battery commander on all matters concerning the character of the designated positions. The commander then makes his selection of positions.

At the very first opportunity the battery commander must carefully examine the firing position as any mistake here is fraught with serious consequences.

It is but seldom that it is possible in the mountains to place a battery in such a manner as to enable it to fire on the majority of targets (due to the presence of dead space). Here, more than anywhere else, it is necessary to echelon batteries in depth as well as parallel to the front line. Batteries placed in depth fire against nearby targets, while those placed closer to the front lines act against distant targets. It also must be remembered that flanking positions have the great advantage in that they permit the conduct of fire in the dead space of the other batteries.

5 June 1940

THE ROLE OF ENGINEERS IN THE DEMOLITION OF PERMANENT EMPLACEMENTS.
[Rol saper pri razrushenii Dot.] Colonel L. Blokhin

An example of successful cooperation of sappers with infantry and tanks is seen in the breakthrough accomplished by Soviet forces in September 1939 in the Sarny (Poland) fortified region. These fortifications, built by the Poles over a five-year period consisted of three lines with permanent machine-gun emplacements, situated every 500-800 yards. The entire region as a whole and each emplacement separately were protected by barbed wire. Before the front line of resistance a ditch was dug 15 yards in width and 3 yards in depth, filled with water and mined.

The break through this fortified region was accomplished by a battalion of engineers, which organized six groups, each group consisting of 5-6 men, and each carrying 100 kilograms of explosive agents. These groups crawled close to the permanent emplacements, aided in such action by riflemen and tanks. Upon reaching an emplacement they covered machine-gun embrasures with bags containing sand and stones, and neutralized rifle embrasures by throwing hand grenades. Then they would arrange the explosive charge, and if the personnel refused to surrender, would proceed to demolish the emplacement by explosion. As a result of close cooperation with infantry and tanks the engineers were able to destroy 35 permanent emplacements very speedily and with slight losses.

Similar results were secured during the break through the so-called Mannerheim Line on the Karelian Peninsula in February 1940.

7 June 1940

DEFENSIVE ACTION IN THE MOUNTAINS.
[Oborona v Gorakh.] Brigade Commander V. Kornilov

In discussing mountain warfare Friedrich Engels arrived at the conclusion, which holds good today, that offensive is preferable to defensive. But even during that period in the past, when technical war equipment was very primitive, Engels wrote about defense as follows: "Should this mean that the defense of a mountainous terrain is useless? Of course not. This only means that the defense should not be passive alone, that it must derive its strength from mobility, and that everywhere it must act in offensive fashion."

Modern mountainous theaters of war, in spite of the general progress of culture and science, are but little different from the mountains of Switzerland of those days, when Engels wrote his remarkable work. Automatic arms in the infantry, the varied modern artillery—from the battalion and regimental guns, to heavy caliber mechanically drawn artillery, tanks and aviation—all of these means of warfare afford to defensive forces in the mountains new tactical and operative possibilities, and strengthen defense. Together with the use of the automobile, these means permit a broad realization of Engels' advice to "derive its strength from mobility." The immense growth of engineering and the mechanization of labor strengthen still further modern defense, securing its rear by roads. The abundance of various means of liaison permits the organization of effective command even in high mountains. Modern aviation assures reconnaissance, liaison, and is a constant threat against any enemy approach or flanking movements. Chemical weapons can be used with great success in strengthening defense.

In adddition to all this, the principal factor of any defense, that of terrain, gives great advantages to the defender in the mountains.

"Mountainous territory—Clausewitz wrote—is especially inviting in that it offers so many varied points for positions, each better than the other, that one is at a loss in making a definite selection."

The author continues by discussing the operative defense of the Austro-Hungarian forces on the Isonzo in 1915-16, culminating with the Italian defeat at Caporetto, the operations on the Russo-Turkish front in 1916, and certain examples of the recent Spanish War.

8 June 1940

AERIAL ACTION ON THE WESTERN FRONT.
[Deystvya Avyatsii na zapadnom frontye.] Major P. Rolin

The entire air war during recent action on the Western Front was characterized by the preponderant strength of the German "Luftwaffe." During the first eight months of the war Anglo-French aerial operations were less effective than those of the Germans. The latter were able to organize regular reconnaissance flights over the entire territory of their opponents. Aerial photographs were taken in great quantities, and these were most carefully studied. All airdromes and landing fields, as well as the entire system of air bases and types of aircraft located therein, were most minutely reconnoitered. In many instances German aviation was able to learn even such things as the schedule of the working day on the airdromes of its adversary. When decisive action began on the Western Front, German air command was in possession of all data which enabled it to develop a definite and detailed plan for the destruction of enemy aviation at the latter's own bases.

It is to be noted, however, that whenever Anglo-French pursuit craft had sufficient time for getting off the ground, German bombers were subjected to heavy losses. A case was observed, when a patrol of French pursuit planes destroyed all of the German bombers (18 dive bombers of the Junkers 87 type), which were attacking an airdrome.

Thus, the Germans suffered their greatest air losses during air combat, while the Allied aviation suffered mostly from attacks against airdromes.

During this action the air forces of both sides gave practical tests to a number of technical and tactical innovations.

The planting of mines from the air was found to be effective in blocking the routes of Allied retreat.

The Allies were not able to devise an effective defense against the delayed action aerial bomb, which, in some instances detonated seven days after being dropped.

French air forces used rejected artillery shells as aerial bombs, especially old 90-mm shells.

Aerial and parachute landing parties were widely employed. At times smoke screens were used for the protection of such operations.

Certain defects were shown by dive bombers. Air brakes on such craft proved to be a serious detriment, as they make it easier for the pursuit plane to catch up with the bomber and to destroy it with impunity, since the bomber's rear is most difficult to defend in such a situation. In this manner on 23 May, at Arras, the Germans lost 9 dive bombers of the Junkers 87 type. It is conceivable that in the future it may become expedient to protect such bombers with pursuit aviation. Most likely their defensive armament will have to be increased.

French and English dive bombers gave a rather weak account of themselves. On 19 May the French were forced to employ some of their naval dive bombers of American manufacture, but on that day alone they admitted having lost more than 50% of the French dive bombing craft.

9 June 1940

THE EMPLOYMENT OF ENGINEER UNITS IN COMBAT.
[Primenenye inzhenernykh chastey v boyu.] Captain M. Dimitryev

The motorized pioneer battalion of the German army corps consists of headquarters, three pioneer companies, one bridge company equipped with pontoon equipment of the "W" type, a machinery section equipped with all the necessary articles for the building of trenches, bridges and obstacles, engineer section, and a searchlight platoon.

The motorized pioneer battalion of the German division consists of headquarters, three pioneer companies, a bridge column equipped with inflatable boats and pontoons.

Each German infantry regiment has a pioneer company. Its bridge-building equipment enables the German division to build a pontoon bridge with a carrying capacity up to 8 tons, 2.8 yards in width and 80 to 100 yards in length.

German engineer units, more than any other auxiliary arm, contribute to the success of an engagement. While in many other armies engineer forces are utilized mostly for the establishment of liaison and for execution of not too complicated engineering tasks, German engineers are combat units which insure the success of tank and infantry action.

Labor battalions are employed in the rear areas for all types of renovation and repair work.

10 June 1940

CAVALRY ACTION ON FLANKS AND IN REAR OF THE ENEMY.
[Deystvya konnitsy na flangakh i v tylu protivnika.] Major General A. Zhidov

Cavalry is endowed with two basic qualities: high mobility and maneuverability, and the ability to strike sudden blows. Thanks to these qualities, as well as to the nature of its organization and armament, greatest results were always attained by cavalry when used in large masses and with a definite purpose, especially in the form of sudden, audacious blows against the enemy rear or flanks. When used for second class missions, in widely separated, small units, cavalry is forced to passive action, without attaining desired results.

In support of the above theory General Zhidov quotes such examples of military history as cavalry action in the Russo-Swedish battle of Poltava (1709), the Russo-French action on the river Adda (1799), Russo-French battle of Borodino (1812), and in numerous cavalry engagements during the World War, 1914-1918 and the Russian Civil War.

The utilization of cavalry for action against the enemy flanks and rear will take place:

- in successful development of offensive operation (advance of cavalry against the turned flank);
- in actions involving the joining of own armies (in independent direction), or in the development of the success of offensive action (breakthrough);
- in anticipating a meeting engagement (sending of cavalry in advance);
- in operative pursuit.

In all of these cases the basic problem of the cavalry will be:

- to emerge on the enemy flank or in his rear, to encircle and destroy the main enemy group (human and material strength) in cooperation with air force, moto-mechanized units, aerial landing parties, and forces advancing on the front;
- to crush the approaching operating reserves, rear areas, higher headquarters with their facilities of command, airdromes, etc.

Such great and complicated problems will be executed only by large and sufficiently strong cavalry forces, probably not less than by a reinforced cavalry corps.

Under conditions limiting the employment of cavalry (in the mountains), such problems will be handled by not less than a reinforced cavalry division.

11 June 1940

COOPERATION OF AVIATION AND LAND FORCES.
[Vzaimodeystvye Avyatsii s nazemnymi voyskami.] Colonel E. Yerlykin

Early in January 1940, by agreement with the command of land forces, an aerial attack was accomplished against the concentration of Finnish infantry and cavalry at the railroad station of Perkjarvi. The assault was sudden, from low altitude, and executed by a large number of aircraft. A large number of the Finns were at a halt. Immediately following the aerial attack our infantry advanced. The demoralized enemy abandoned the station and fled.

Well conceived and prepared cooperation occurred during the breakthrough of the Mannerheim Line. Being ceaselessly attacked by our bombing and pursuit craft the Finnish forces were literally crushed. Many permanent firing emplacements were destroyed. Communications were immediately disrupted. Simultaneously with frontal attacks our aviation struck against the Finnish reserves. Separate Finnish efforts to open flanking fire were speedily discovered by pursuit craft, and by means of dive bombing and machine-gun strafing pursuit craft forced the enemy to cease firing.

During the course of the advance and the development of breakthrough the chief of staff of one infantry force advised the headquarters of an air force unit that the advance was delayed at the Leipiasuo station. He asked for immediate information on the enemy strength and resources. Within five or six minutes a group of pursuit craft was dropping into the area of infantry headquarters a message containing a rough sketch of the enemy defensive system and the situation of his firing means. During action which ensued both headquarters cooperated to the fullest extent.

A good example of such cooperation appeared in the liquidation of Finnish forces first on the Koivisto island, and later on the peninsula of the same name. Excellent contact was maintained with the infantry unit which operated in that direction.

When the attack was opened poor meteorological conditions prohibited the use of powerful bombing aircraft. All action was performed by pursuit ships. The commander of the pursuit unit was compelled to "transform" pursuit craft into bombers. During an entire day Koivisto island was subjected to ceaseless bombing by pursuit craft. The entire Finnish defensive area was repeatedly bombed. Ammunition dumps were blown up, shelters were destroyed, barracks were burned. Not expecting aerial bombing in such poor weather, and moreover by pursuit craft, the Finns precipitately fled the island.

During the capture of Koivisto peninsula the infantry commanders sent hourly situation reports to the aviation commanders. The latter watched the progress of the battle, and whenever strong enemy resistance was detected the infantry was immediately aided by aerial bombardment and machine-gun strafing.

Air information service was especially well organized as shown by reports of enemy situation to infantry furnished by air force units, wherein such minute data was furnished as the location of individual houses and trees. This was especially important to the artillery.

12 June 1940

THE BREAKTHROUGH AND ITS PROGRESS.
[Proryv i yevo razvitye.] Major E. Sosnin

The break through the defensive front and its further progress may be presented as follows on the basis of recent experiences in France.

The break through defensive positions is accomplished by large formations of heavy and medium tanks, infantry and pioneers, with powerful support by air force and particularly by dive bombers. Simultaneously large air forces accomplish raids against reserve concentrations in the deep rear, headquarters, rear establishments, airdromes, railroad junctions, thereby disrupting command and preventing the bringing up of operative reserves. At the same time large formations of parachute troops and aerial landing parties are landed far behind the front line with the purpose of capturing the most important river crossings and other objects, which may delay or render difficult the progress of the breakthrough, and also to further disorganize the direction and supply of enemy forces.

The second echelon is composed of light tank units, armored cars, motorcycle units, motorized infantry and artillery. This whole mass violently bursts into the breach made by the first echelon and without stopping to liquidate the still remaining points of resistance begins to widen and deepen the breakthrough as rapidly as possible. During all of this the cooperation between aviation and the second echelon is not ceased for even one moment. Aviation's task is to prevent an enemy counterattack.

The third echelon consists of infantry which finally clears the terrain of the remaining enemy and widens the breakthrough by advancing against the flanks. The infantry is followed by special and technical forces which restore communications and those structures which are needed for insuring the success of the entire offensive operation.

Such is the general outline of the breakthrough technique as used by the German armies. It must be remembered however, that much of the success of such an operation is predicated upon local conditions in the war theater, time of year, and enemy strength.

13 June 1940

RECONNAISSANCE AND OBSERVATION IN ARMORED TRAIN UNITS.
[Razvyedka i nablyudenye v bronepoyezknykh chastyakh.] Major V. Telnov

In modern military operations armored trains can play an important role, especially in sparsely populated, expansive war terrain. They must destroy the enemy's troops and armored formations, his fire producing resources in the region of the railroad, and they must protect railroad lines and equipment.

This brings about the problems of armored train reconnaissance, which must classify the nature of enemy anti-armored defense, his system of fire, locations of obstacles, etc. Also reconnaissance will ascertain the presence of enemy armored train, tank and artillery units. It will carefully study the terrain, the condition of the railroad track and installations. Reconnaissance will find suitable places for observation and localities for open and concealed firing positions.

The principal method of reconnaissance in armored train battalions will generally be observation. It is conducted by the agencies of the armored train battalion and of the separate trains.

All means of reconnaisssance—excepting aerial reconnaissance—are available to the armored train battalion.

14 June 1940

INDEPENDENT ACTION OF TANKS.
[Samostoyatelniye deystvya tankov.] Major General A. Shtromberg

Independent action of large German tank units and other mobile forces in Poland had brought about a lively expression of opinion in foreign press, both military and general. Not infrequently superficial analysis of the experiments accomplished by tank forces led to unreasonable opinions and conclusions.

On one hand there was the over-estimation of independent action of tank forces, a certain idealization of tanks as the omnipotent and sole arm, which will decide all future operations.

On the other hand, certain new possibilities shown in the actions of German tank units were ignored. Emphasis was placed on the peculiarly favorable conditions, weakness of Polish forces, etc. German successes were explained by various "accidents," and not because of new forms and methods of warfare.

The success of German tank forces in Belgium and Northern France proved conclusively that the success attained there and in Poland is explained not only by favorable circumstances, but that it is the result of a definite military doctrine based upon a concrete calculation of enemy forces and upon new potentialities of modern war technique, including tanks and other mobile forces.

During the Polish campaign the German tank forces used the following echeloning plan:

Armored (tank) divisions, light and motorized, sometimes united into large, mobile units, appeared as the first operative echelon of the German forces. Basically their purpose was to divide the enemy into isolated groups, to crush and disorganize the deep rear, to prevent the main enemy forces from outflanking the German forces. In performing these tasks mobile units broke through Polish forces and proceeded into the operative rear, to important rear areas, and to important political, economic and military centers.

The second operative echelon was composed of forces of all arms, artillery and tanks, such as corps tank regiments.

It was their mission to encircle and totally destroy the divided and isolated groups of the Polish forces. In places (in Southern Poland, for instance), units consisting of all arms broke through Polish positions in order to enable mobile forces to enter the breach for the purpose of developing the breakthrough.

Combat aviation, aside from independent action directed towards the attainment of the general objective—speedy destruction of all Polish armed forces—had cooperated unceasingly with both the main forces and mobile units.

Tactical conclusions from the activities of tank forces show that it was entirely possible to cover 50 to 65 miles in 24 hours. Only in face of especially stubborn resistance, and when the crossing of large river obstacles was necessary, was the tempo of the advance of tank units lowered to 31 to 37 miles in 24 hours.

Under definitely favorable conditions the total distance covered reached 375 to 435 miles during 18 to 20 days, during which time only 2 or 3 rest periods of one day's duration were required by the personnel.

Even during independent action of such broad scope the supply system functioned perfectly.

It is not to be doubted that the success in the use of tank forces was based on uninterrupted cooperation with motorized infantry, aviation, forces consisting of all arms, and engineer units.

The smoothness of cooperation between the armored forces and aviation invites special attention. The latter more than once was called upon to relieve tanks in very difficult situations, and it was always most prompt in responding to a call for aid.

Of no less importance were the activities of engineer units. They accompanied not only the infantry, but also motorized and tank forces, during the entire course of the action.

Thus, general success was attained, thanks to the cooperation of all forces and all means, and to the utilization of strong features of every branch.

THE ART OF INFANTRY OFFENSIVE ACTION.
[Iskusstvo nastupatelnovo boya pekhoty.] Major General B. Kolchigin

The cooperation of infantry with the other arms should be flexible, and adaptable to local conditions. When engaged in hand-to-hand combat with the enemy, infantry will be deprived of direct artillery support, and will have to act either alone or supported only by tanks. After destroying the enemy with the aid of tanks on the first line of resistance, the infantry will then "lean against" the screen of artillery fire.

MARINE CORPS GAZETTE

September 1940

ACCURACY VERSUS VOLUME IN RIFLE FIRE. Captain Shaw
NEW STYLES IN ORGANIZATION. Colonel del Valle and Major Harris

MILITARWISSENSCHAFTLICHE MITTEILUNGEN (Austria)

BY MAJOR WILLIAM H. SPEIDEL, Infantry

May 1940

GERMAN SECURITY IN SCANDINAVIA.
[Deutsche Sicherheit in Skandinavien.] Major General Paschek

A military and political review from 1 to 26 April 1940: (1) The war guilt of the Western Powers; (2) The Western Plan for the extension of the war; (3) The German counteroffensive; (4) Political developments.

PRESENT MEANS FOR CONDUCTING NAVAL WARFARE.
[Seekriegsmittel der Gegenwart.] Captain Descovich

THE CONFLICT IN EASTERN ASIA FROM 15 JANUARY TO 20 APRIL 1940.
[Der Konflikt in Ostasien. Vom. 15. Jänner bis 20. April 1940]. Major General von Lerch

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BALLOONS AND AERIAL BLOCKADES.
[Feldballone und Luftsperren.]

THE USE OF LUMINOUS PAINTS FOR LIGHTING DURING BLACKOUTS AND FOR VARIOUS MILITARY PURPOSES.
[Leuchtfarben für Verdunkelungsbeleuchtung und verschiedene militärische Zwecke.] Dr. Stäger

The visibility of an object at night is not necessarily due to the strength of the illumination. It may be due to the brightness of the

surface of the object in question—whether due to its own light or to the reflection of light from without—as compared with the degree of darkness of its surroundings. As an illustration, the faint light emitted by a glowworm can readily be perceived at a distance of a few yards in surroundings which are quite dark at night, while the light from a flashlight, which may be a thousand times more powerful, would scarcely be noticed at the same distance in bright daylight. This principle similarly applies to the various types of phosphorescent signs seen in the darkened streets of cities. The wish that these signs could be made somewhat brighter with a light that would not dissipate so rapidly has given rise to a fundamentally new technique of lighting.

Since different luminescent substances are often confused with, or are often indistinguishable from, each other, this article will define the following classes:

(1) Radioactive luminous substances are a mixture of radioactive substances belonging to the uranium, radium or thorium series and such substances as zinc sulfide, which give out a visible light when bombarded with radioactive rays (alpha particles). Although only slight traces of the radioactive atoms are incorporated in the mixture, these traces nevertheless have made the latter so expensive that their use has been confined exclusively to the marking of hands on watches and clocks and the indicators of precision instruments. These substances will emit light for years and require no irradiation, either in advance or after being used.

(2) In contrast with the foregoing substances, the *phosphores* (light bearers), known as "light gatherers," must be irradiated beforehand. They absorb light up to a saturation point, just as a sponge absorbs water, and have the power to emit it again. This illuminating power, however, gradually becomes dissipated until it finally disappears altogether. The substances used on the signs mentioned above belong in this class. They have nothing to do with the chemical element *phosphorous*. Instead, they are luminous products of alkaline earth sulfide (to which belong barium, strontium and calcium) or zinc sulfide with traces of other salts which possess the power to stimulate the storage of light. The disadvantage of these substances for practical purposes is that their illuminating power becomes rapidly dissipated within the course of a few minutes.

(3) *Fluorescent substances*, on the other hand, constitute a different group. They store no light, nor do they produce a light of their own. They have the quality of picking up rays and transforming them into rays of a different kind. For example, if such materials are irradiated with invisible ultraviolet rays (possibly from a mercury-vapor lamp), they assume the colors of the visible portion of the spectrum—such as yellow, green or blue shades. This fluorescent radiation lasts only as long as the lamp continues to throw its invisible light upon the substance in question. For a long time chemists have been familiar with many organic and inorganic substances that are fluorescent. It has been recently reported that the I G Color Industry is placing on the market synthetically produced organic substances with a coal tar base, substances which are very durable and which are being made available in the form of *luminous paints* ready for application.

These luminous paints constitute the ideal means of illumination during blackouts and for military purposes when used in connection with a suitable source of ultraviolet rays. Their use presents no difficulty as in the case of light bulbs coated with a filter or blue paint which, if accidentally rubbed off, will permit the white light to penetrate the filter. Their illuminating power can be regulated within broad limits and depends not only on the fluorescent capacity of the paint involved, but also on the radiating power of the lamp emitting the ultraviolet rays and the distance between the two. The brightness of a surface can be so regulated that people can see it readily at a distance of several hundred yards, even though it is invisible to hostile planes circling at the usual altitude above the city. Such paints posses the special advantage in that they can be sold at a low price, so low as to make it even possible to paint entire fronts of houses, streets and squares, causing them to be illuminated at night with a soft and magic light. In the future, therefore, it will be possible to maintain a full volume of street traffic and prevent accidents in spite of the blackouts. Luminous paints in different colors can be used to mark mail boxes and the entrances to subways and shelters, the particular color selected being the means by which the pedestrian identifies the desired destination. The edges of curbing and steps, the corners of houses, landings, trees and poles can all be visibly marked in order to prevent stumbling and collision. Even textiles may be similarly treated. The important parts of weapons of all kinds can be rendered visible only to those who are to operate them, so that their location will remain a secret to the enemy.

Mercury vapor lamps emitting ultraviolet rays should be employed only when it is desired to illuminate large surfaces with a fluorescent light. For smaller surfaces treated with luminous paint, a less pretentious source of ultraviolet rays will suffice. It must be remembered that every burning electric light bulb generates ultraviolet as well as visible rays of light. If quartz glass, transparent to ultraviolet rays, and a filter restraining the visible rays are used, all that may be necessary is a pocket flashlight.

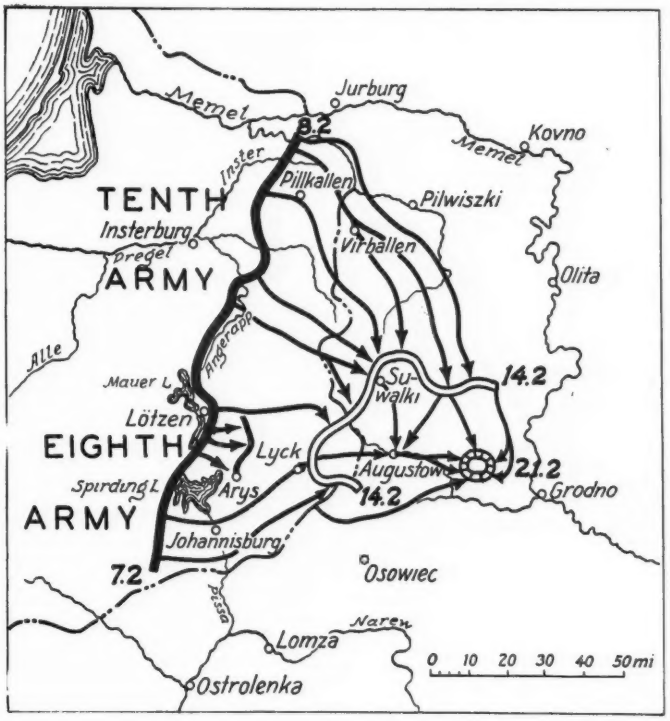
MILITAR-WOCHENBLATT (Germany)
By Major William H. Speidel, Infantry

1 March 1940

Greater Germany's war of liberation, 1940.
[Grossdeutschlands Freiheitskrieg 1940.]
The incidents of the war from 18 to 24 February 1940.

The German air force in the winter battle of the Masurian Lakes, February 1915.
[Die deutsche Fliegertruppe in der Winterschlacht in Masuren Feburar 1915.] Colonel Sartori

The author recalls the part played by the German air force in the Battle of the Masurian Lakes. If, as the German führer stated in a speech before the Reichstag 6 October 1939, Tannenberg was one of the most brilliant battles in the history of the world, then the same credit must be accorded the Masurian battle. The number of prisoners taken and the amount of artillery, machine guns and other booty captured exceeded even that of the Battle of Tannenberg.



The author, after reviewing the situation prior to the Battle of the Masurian Lakes, gives a list of the aircraft units that were available to the Germans in this locality. The 50th, 51st and 52d Aviation Squadrons were assigned to the Tenth Army, while the 14th, 16th and 49th were assigned to the Eighth Army. The 14th Squadron had seven planes, three of which were monoplanes known as tumbler pigeons; all other squadrons had six biplanes equipped with 100 H.P. motors. The crew in all cases consisted of a pilot and an observer. Normally each plane had a speed of 62 miles per hour, a cruising range of 250 miles and a duration of from four to four and one-half hours. All planes carried bombs weighing eight, eleven and twenty-two pounds as well as aerial darts. In order to expedite starting the motors during low temperatures, the squadrons were equipped with a hot water vehicle. On account of the poor condition of the Polish roads, each squadron was furnished with 25 trucks and 92 horses with wagons as required.

Aerial reconnaissance was initiated 8 February. It was necessary to determine whether the Russians were attempting to reinforce the flanks. The aerial missions assigned were to observe the railway as far as Kovno and to reconnoiter those zones in which the flanks might be threatened—in the north along the Niemen in the vicinity of Jurburg, in the south the area in the vicinity of the Ostrolenka and Lomza fortresses. Eventually the reconnaissance was ordered to cover the terrain along which the forward movement was progressing—in the north the area Pillkallen—Wirballen, in the south the area Lötzen—Arys—Lyck.

On 8 February only the 14th and 16th Squadrons were ready, the others having been held up by the snow.

Despite the difficulties encountered due to the severity of the weather, the squadrons employed carried out their assigned missions.

Following the reports made by seven observers, all fears concerning any Russian reinforcements were allayed.

The various squadrons reported themselves ready in the following order: the 51st on 9 February, the 50th on 12 February, the 52d on 13 February and the 49th on 17 February. On the 9th, as well as the 14th, nine reconnaissance flights were carried out, and on the 10th, fourteen. On the 9th observers reported that the enemy was beginning a general withdrawal. From the 9th to the 14th they reported that all movement along the railway to Kovno was limited to departing transports only. The observers also covered the fortified cities of Kovno, Olita, Grodno, Osowiec and Lomza; the double-track railways that run eastward from Kovno and Grodno and that part of the Niemen River between these two cities. The reconnaissance reports concerning the Russian withdrawal were not only rich in their significance, but were rendered to the High Command of the Tenth and Eighth Armies with such timely dispatch that the latter were able to get a perfect picture of the withdrawal. The reports on the situation of the German troops were highly significant in the interest of command, as communication between the various units and between these and their higher command posts were, due to the severity of the weather, often completely broken off. On the evening of 14 February the mass of the Russian Tenth Army was compressed in the Augustow—Suwalki area. Retreat toward the east was blocked by the XXI Army Corps which constituted the left flank of the Tenth Army, but was open toward the southeast and south along the snow-covered forest lanes of the extensive Augustow Forest. This exit, however, was closed by the XXI Army Corps which was ordered to circumvent the forest and march toward the area northwest of Grodno. Due to inclement weather no reconnaissance flights could be undertaken on 15 and 16 February.

Between 17 and 20 February planes were assigned the missions to observe the railroad from Pilwiszki to Kovno, to secure information on the unloading of troops at Grodno and to reconnoiter the right flank in the area occupied by the fortified positions from Lomza to Oswiec. Accordingly, on 17 February five reconnaissance flights were carried out, on the 18th ten, and on the 19th nine. Their reports informed the higher command of the following situation: On 17 February the divisions of the northern and southern flanks were combined in the vicinity of Augustow. Parts of the Russian Tenth Army, which up to 20 February had been attempting to get through the Augustow Forest toward Grodno, were completely imprisoned. On 21 February the enemy failed in his last attempt to crash through, and his resistance began to weaken. The grand operation for encircling the Russian Tenth Army had come to an end. The German Eighth and Tenth Armies had captured 120,000 men and 300 pieces of artillery and inflicted equally heavy casualties upon the enemy. The Army of General Siewers had ceased to exist.

The support which was rendered by the flying personnel cannot be lightly passed over. Between 8 and 20 February the squadrons assigned to the Eighth and Tenth Armies carried out 73 reconnaissance missions, making flights which totalled 10,674 miles. During sixteen reconnaissance flights bombs were released on both stationary and moveable targets. During six reconnaissance flights the planes were subjected to infantry as well as artillery fire. With the exception of a few bullet holes very little damage was done. There was no indication of any Russian planes participating. In estimating the degree of accomplishment during the extremely low temperatures, we must consider that in 1915 there were many technical aids to aerial navigation that were still to be developed. Meteorological training was deficient and the clothing of the crew, as compared to modern electrically heated headgear, gloves and suits, was ill-adapted to the rigors of a severe winter. Today the progress of technical developments has made it possible to employ aviation as a fighting force capable of inflicting severe casualties on enemy concentration and separating his front from his source of supply.

THE RUSSIAN-FINNISH WAR.
[Der Russisch-Finnische Krieg.] Lieut. General Schönheinz

THE ASSAULT AGAINST TOPOLNO BY A MOTORCYCLE COMPANY ON 3 SEPTEMBER 1939.
[Die Erstürmung von Topolno durch eine Radfahr-Schwadron am 3. Septbr. 1939] Lieutenant Eisl

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THE CONFLICT IN THE FAR EAST.
[Vom Konflikt im Fernen Osten.] Colonel Rudolf v. Xylander

The Japanese policy during the winter 1939-40.

8 March 1940

GREATER GERMANY'S WAR OF LIBERATION, 1940.
[Grossdeutschlands Freiheitskrieg 1940.]

Incidents of war from 25 February to 2 March.

TACTICS AND STRATEGY.
[Taktik und Strategie.] General Wetzell

This is a controversial article which presents some historical examples offered to illustrate the relative values of the concepts of tactics and strategy. It opens with a quotation from Field Marshal Count Moltke that strategy is the application of sound common sense in the conduct of war. At another time Moltke remarked that "strategy" provides the means of getting the troops on the battlefield and that, from then on, it is "tactics" which provides for their employment in battle. There is no well-defined line of demarkation between them, General Wetzell says, nor do they run concurrently. In actual war one is constantly issuing as a result of the other.

There are occasions where strategical considerations are relatively of greater importance than tactical considerations, such as in the case of Tannenberg and the First Battle of the Masurian Lakes. The author, however, believes that Ludendorff generally gave prime consideration to the principle of tactics.

THE FORMATION OF THE BRIDGEHEAD AT RADYMNO ON THE SAN.
[Die Bildung des Brückenkopfes bei Radymno am San.] Lieutenant Bauernstätter

The author narrates the incidents which transpired prior to and during the establishment of the bridgehead at Radymno during the Polish campaign in 1939.

INFLUENCE OF THE MEANS OF TRANSPORTATION, PARTICULARLY THE RAILWAY, ON THE PROGRESS OF THE BATTLE OF THE MARNE.
[Einfluss der Verkehrsmittel, insbesondere der Eisenbahn auf den Verlauf der Marneschlacht.] Colonel v. Mantey

The material contained in this article is similar to that covered in a previous article by Colonel von Mantey which appeared in the Militär-Wochenblatt of 27 May 1938. A translation of that article "The Railway Situation on the Western Front at the Outbreak of War, 1914," is on file at the Command and General Staff School Library.

3 May 1940

GREATER GERMANY'S WAR OF LIBERATION, 1940.
[Grossdeutschlands Freiheitskrieg 1940.]

The battle of the German Army in Norway. The incidents of the War during the week of 21 to 28 April 1940.

MEANS OF SIGNAL COMMUNICATION OF THE GERMAN ARMY IN 1914.
[Nachrichtenwesen des deutschen Heeres 1914.] Lieut. General Fellgiebel

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COURAGE DOES NOT ALWAYS IMPLY LEADERSHIP.
[Tapfer sein heiszt nicht immer auch Führer sein.] Major Blum-Delorme

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STIMULATING THE TRAINING OF RECRUITS UNDER CONDITIONS OF DARKNESS DURING THE FIRST EIGHT WEEKS.
[Anregungen für die Ausbildung der Rekruten bei Dunkelheit in den ersten 8 Wochen.] Lieut. General Boltze

This article presents the concluding portions of a training program offered for the training of recruits at night. It applies to horse-mounted infantry and both horse-drawn and motorized artillery.

THE CONFLICT IN THE FAR EAST.
[Vom Konflikt im Fernen Osten.] Colonel Rudolf v. Xylander

Japanese interests in the Chinese Opposition Government.

10 May 1940

GREATER GERMANY'S WAR OF LIBERATION, 1940.
[Grossdeutschlands Freiheitskrieg 1940.]

England's diplomatic and military capitulation in Norway. The incidents of the war during the week 27 April to 4 May 1940.

EXTRACT FROM THE POLISH CAMPAIGN.
[Aus dem Feldzug in Polen.] Captain von Lyncker

A divisional reconnaissance battalion engaged in the pursuit south of Mlawa on 4 September 1939.

WARTIME TRANSPORTATION.
[Transporte in Kriegszeiten.] Major General Dihle

The following presents an approximate illustration of the difference in transport capabilities of three means of transportation:

(a) The railroad. A train of 40 freight cars, with a capacity of 15 tons each, has a total capacity of about 600 tons.

(b) Inland navigation. A barge has a capacity of from 500 to 800 tons (approximating that of a single railway train). Its average speed is from four to six miles per hour.

(c) Motor trucks. 150 motor trucks, each with a capacity of four tons, have a total capacity equal to that of a railway train. Its average speed is 20 miles per hour.

There are times when aircraft may be utilized for transport purposes.

SOVIET RUSSIAN CAVALRY COMBAT REGULATIONS.
[Sowjet-russische Gefechtsvorschrift für die Kavallerie.]

(1) The trooper and small units. (2) Reconnaissance. (3) The march: 28 to 34 miles per day. (4) The attack; mounted or on foot. (5) The defensive. (6) The employment of the platoon. (7) Outpost duty. (8) Squad and platoon of the mounted machine-gun troop. (9) Fighting under special conditions. (10) Ammunition supply for the platoon.

THE GAP IN ENGLISH DEFENSIVE MEASURES.
[Das Loch in den englischen Verteidigungsmassnahmen.]

FRANCE'S DIFFICULTY IN THE PROCUREMENT OF ALUMINUM.
[Frankreichs schwierige Versorgung mit Aluminium.] Dr. Ruprecht

17 May 1940

GREATER GERMANY'S WAR OF LIBERATION, 1940.
[Grossdeutschlands Freiheitskrieg 1940.]

England's withdrawal from Norway. The latest plans of the Western Powers for extending the theater of operations. The beginning of the German May offensive in the west. The incidents of the war during the week of 5 to 12 May 1940.

EXTRACTS FROM THE POLISH CAMPAIGN.
[Aus dem Feldzug in Polen.] Lieut. Colonel Scheidies

The fighting at Wola-Wodynska on the 13th and 14th of September 1939.

PRACTICAL SUGGESTIONS FOR THE TRAINING OF A RIFLE COMPANY IN THE ERSATZ ARMY.
[Praktische Winke für den Ausbildungsdienst einer Schützenkompanie im Ersatzheer.] Lieut. Colonel Köhn

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COOPERATION BETWEEN BRITISH AIRCRAFT AND INFANTRY DURING THE WORLD WAR.
[Das Zusammenwirken der britischen Heeresflieger mit der Infanterie in den Schlachten des Weltkrieges.]

FURTHER DEVELOPMENTS IN ITALIAN ARMAMENT.
[Weiterer Ausbau der italienischen Rüstungen.] Colonel Rudolph v. Xylander

24 May 1940

GREATER GERMANY'S WAR OF LIRERATION, 1940.
[Grossdeutschlands Freiheitskrieg 1940.]

The German war offensive on the Western Front from 10 to 17 May 1940.

EDUCATION OF THE SOLDIER IN TIME OF WAR.
[Aufgaben der soldatischen Erziehung im Kriege.] Lieut. Colonel Knopff

See "Foreign Military Digests," page 55.

DEFENSE AGAINST THE TORPEDO IN THE CONSTRUCTION OF THE BATTLESHIP.
[Der Torpedoschutz im Kriegsschiffbau.] Captain Waldeyer-Hartz

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THE PROGRESS IN THE DEVELOPMENT OF THE ITALIAN ARMY.
[Fortsetzung des Wehrmachtausbaus Italiens.] Colonel Rudolph v. Xylander

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THE BAKU OILFIELDS AS A SOURCE OF MINERAL OIL SUPPLY FOR RUSSIA.
[Die Ölfelder von Baku in der Erdölversorgung Russlands.] Dr. Paul Ruprecht

MILITARY ENGINEER

September-October 1940

AERONAUTICAL CHARTS. P. A. Smith, Chief, Aeronautical Chart Section, U.S. Coast & Geodetic Survey

THE RIVER AND HARBOR FUNCTIONS OF THE CORPS OF ENGINEERS. Brigadier General Robins

THE HIGHEST STANDARD GAUGE RAILWAY IN THE WORLD. T. G. Murdock

METEOROLOGY IN PEACE AND WAR. Captain Martin

AN INDIVIDUAL CAMOUFLAGE KIT. Captain Rodyenko

THE COAST GUARD. Rear Admiral Waesche

ACHIEVEMENTS IN SUBSTRATOSPHERE FLYING. V. A. Ivanoff

A NEW MOTORCYCLE MACHINE-GUN CAR. Colonel Eldred, NYNG

EQUIPMENT FOR ENGINEER TROOPS. Brigadier General Kingman

November-December 1940

THE ENGINEER AND NATIONAL DEFENSE. Major General J. L. Schley

THE FIRST ARMY MANEUVERS—IMPRESSIONS OF THE TWO-SIDED ARMY EXERCISE. Lieutenant Colonel J. H. Carruth

WATER SUPPLY FOR MILITARY PURPOSES. Lieutenant Colonel H. Miller

ENGINEERS IN COMBAT. Lieutenant Colonel D. B. Adams

THIS GUERRILLA WARFARE. Captain B. D. Gill

MILITARY SURGEON

September 1940

ON THE MEDICAL CONTROL OF MOBILIZATION. Hanz Zinsser

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[Theoretische und praktische Grundlagen des Geländefahrens.] By Dischler, National Technical Advisor at the Wünsdorf School for Armored Troops.

GERMAN MOTOR TRANSPORT TROOPS IN SYRIA, PALESTINE AND THE SINAI PENINSULA.
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May-June 1940

CONCERNING THE DEFENSIVE.
[A propos de la défensive.] Colonel Monfort

Modern warfare, according to Colonel Monfort, requires a modification of existing ideas concerning defensive systems. The defensive zone should be based primarily on the antitank defenses. Depth is, of course, still essential. However it is believed that too much stress has been laid on the importance of flanking fires to cover adjacent strong points or centers of resistance. Self-protection, all-around defense within each of these areas should take precedence over the protection of adjacent areas. A unit whose weapons have been located to provide flanking fire for its neighbors will often find those weapons useless and its own defense difficult should the adjacent unit be overrun by the enemy. Forward zone defense in particular, then, should be based on strong points and centers of resistance prepared to defend themselves even though surrounded.

The value of machine guns, according to the author, should not be wasted by having them scattered all along the front of a defensive zone. They can be much more effective if located at critical points—preferably at some distance to the rear—to supplement the defense against tanks.

Depth of the position should be assured at all costs, even if, in order to obtain it, gaps have to be left in the forward defenses.

Most antitank obstacles are so light that they would be useless against modern medium or heavy tanks. If obstacles are to be built and used, they should be capable of stopping heavy tanks.

More importance should be given to the question of the timing of fires. Infantry and artillery fire should be withheld until the last minute in order to avoid disclosing positions to the enemy before the hostile infantry attack is launched. Antitank weapons should, on the other hand, open fire as soon as the hostile targets appear or come within range.

ANTITANK DEFENSE.
[La défense anti-chars.] Lieutenant Colonel Perret

The recent operations in Europe indicate the importance of proper antitank defense. The author believes that the organization of such a defense should have priority over all other defensive measures.

Passive defense consists of artificial obstacles so located as to supplement the natural barriers to tank attacks. At least three lines of such obstacles should be constructed, the distance between the lines being approximately that of the effective range of the antitank weapons covering them.

Active defense includes antitank guns, antitank weapons of lesser caliber and destruction detachments. These detachments or teams, four or five to a company, should be trained in handling materiel for rendering tanks immobile—liquid fire, grenades, mines, etc.

The author recommends an antitank defense officer on each regimental and division staff. Such a staff officer would be responsible for the instruction of antitank gunners and destruction detachments as well as for antitank defense measures.

July 1940

A FEW THOUGHTS ON THE GERMAN ARMY.
[Quelques données sur l'armée allemande.] Captain X

The spirit of the German army is very well summed up in the statement of Colonel General von Leeb, army commander on the Western Front: "The attack is much more to the soldier's liking than the defense." In the attack there is more room for courage, resolution and initiative. The defense should be resorted to only when attack is impossible.

The spirit of the attack has dominated the German army even when it was incapable of any kind of warfare. A German regulation of 1921 preached the principals of a war of offensive operations. The introduction to this regulation stated that lack of weapons need not prevent an army from assuming the offensive provided that army was mobile, well trained, capable of using cover and terrain properly.

One reason for the German emphasis on the attack may be found in the fact that practically all of the German military commanders of 1940 participated in the World War and are thoroughly aware of the disastrous possibilities of stabilized or defensive warfare.

The spirit of the attack can also be attributed to the feeling of superiority fostered among Germans by the National Socialist regime which has spared nothing in creating an offensive military machine.

Ingenuity, foresight, determination, enabled Germany to overcome many difficulties and to organzie and equip a force whose characteristics are speed and power. Proponents, such as Generals Guderian and von Reichenau, of the modern mobile army, had considerable difficulty in convincing the militarists of the classic school of the possibilities of mechanization and motorization. Nevertheless, when the course was decided upon, there were no half-way measures in pursuing that course.

As far as strategy is concerned, the German army has adhered to the principals of Clausewitz, Moltke and Schlieffen. These teachers would be somewhat surprised, however, by the unheard of boldness of the decisions of the present German high command as well as by the speed with which those decisions are executed.

With regard to the tactics of the German forces, the author stresses the close cooperation between the various arms, calls attention to the method of using tanks in the attack, and describes the tactics of the air infantry divisions.

COMMENTS ON THE PRESENT WAR.
[Commentaires sur la guerre actuelle.]

These comments are, in reality, a discussion of possible measures to be taken by a small nation, such as Switzerland, to defend itself in modern times.

Modern warfare seeks to defeat the enemy by breaking his morale. This result is achieved by propaganda which aims at creating a state of moral inferiority after which military forces complete the destruction of the weakened enemy.

To combat propaganda active measures can and should be taken. A spiritual defense cannot be maintained by passive resistance to modern methods of propaganda.

To oppose the military forces of a modern nation is a difficult problem; to operate offensively against such forces is out of the question for a small nation, even on an isolated portion of the front.

Favorable terrain for defense is available to the Swiss and artificial fortifications can help materially. But these defenses are of little value unless they are manned by well-trained troops with nerves of steel, prepared to fight to the end.

Another possibility not to be overlooked is that of troops trained in guerrilla tactics. Such troops, taking advantage of Swiss terrain, would be capable of causing any invader of Switzerland considerable worry and difficulty.

August 1940

THE PRESS AND NATIONAL DEFENSE.
[Presse et défense nationale.] Lieutenant Wüst

In time of war, the press can and should render important services toward the national defense. The author of this article discusses the three following missions of the wartime press:

(1) The assurance of intimate contact between the people who, by their work, maintain the normal life of the country, and the armed forces who guard its frontiers.

(2) The publication, for national and foreign readers, of as exact and objective a picture of the war as is possible.

(3) The furnishing of an effective weapon to combat political propaganda, false news and reports, defeatism.

THE SUEZ CANAL.
[Le canal de Suez.] By Ro

A brief discussion of the political and economic problems—past and present—presented by the Suez Canal.

In a final paragraph, the author leaves the impression that the strategic and economic importance of the Suez is somewhat decreased by the opening of the railroad across Asia Minor to Basra on the Persian Gulf.

COMMENTS ON THE PRESENT WAR: ANTIAIRCRAFT DEFENSE.
[Commentaires sur la guerre actuelle: Notes sur la défense contre avions.]

Much discussion has arisen during recent operations concerning antiaircraft weapons. The Poles, in September, 1939, declared that infantry, with nothing more than automatic rifles and machine guns, was helpless against air attacks. Later developments and study, however, would lead to the conclusion that such weapons are effective against low-flying planes, provided that:

(1) They are manned by efficient, courageous crews.

(2) The range is not more than 800 yards.

(3) The direction of fire is directly in line with the flight of the plane. This necessitates locating the guns on the spot to be defended.

The value of the rifle should not be disregarded. A well disciplined platoon of riflemen should be able to score on planes within a range of 400 yards.

The effectiveness of weapons of 25-mm to 40-mm caliber appears to be still open to argument. The 40-mm Bofors gun proved very satisfactory to the Finns and to the Poles. The smaller caliber weapons are probably not powerful enough to damage an armored plane.

Of the heavier guns, the 105-mm gun appears to be most in favor. Its lack of mobility is its chief weakness. The inability to load it, and also the 150-mm gun, as rapidly as the smaller guns, is more than compensated for by the wide effective radius of the exploding projectile.

The main argument in favor of guns from 75-mm to 90-mm is the possibility of delegating to them the triple role of accompanying guns, antitank guns and antiaircraft guns.

The subject of antiaircraft defense brings up two additional problems: coordination between ground and air defense; observation and fire control. The former problem should be controlled by the air defense. The latter problem is a question of communications, radio having proved most dependable thus far.

ROYAL AIR FORCE QUARTERLY (Great Britain)

September 1940

VICTORY AND THE BOMBING OF HINTERLANDS. J. M. Spaight

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KEY TO ABBREVIATIONS

A Med Bul = Army Medical Bulletin

A Ord = Army Ordnance

A Quar = Army Quarterly (Great Britain)

Cav Jour = Cavalry Journal

Cav Jour [GB] = Cavalry Journal (Great Britain)

Chem War Bul = Chemical Warfare Bulletin

CA Jour = Coast Artillery Journal

FA Jour = Field Artillery Journal

Ftg Forc = Fighting Forces (Great Britain)

La France Mil = La France Militaire (France)

Inf Jour = Infantry Journal

Jour RAMC = Journal of the Royal Army Medical Corps (Great Britain)

Jour R Art = Journal of the Royal Artillery (Great Britain)

Jour RUSI = Journal of the Royal United Service Institution (Great Britain)

Jour USII = Journal of the United Service Institution of India (Great Britain — India)

Kras = Krasnaya Zvyezda (Russia)

MC Gaz = Marine Corps Gazette

Mil Mitt = Militärwissenschaftliche Mitteilungen (Austria)

Mil-Woch = Militär-Wochenblatt (Germany)

Mil Eng = Military Engineer

Mil Surg = Military Surgeon

Nav Inst Proc = Naval Institute Proceedings

Panzer = Die Panzertruppe (Germany)

QM Rev = Quartermaster Review

Rv Mil Suisse = Revue Militaire Suisse (Switzerland)

RAF Quar = Royal Air Force Quarterly (Great Britain)

Roy Eng Jour = Royal Engineers Journal (Great Britain)

Tank = The Tank (Great Britain)

Vet Bul = Veterinary Bulletin

GENERAL

For Aff = Foreign Affairs

Jour Mod Hist = Journal of Modern History

Pol Sci Quar = Political Science Quarterly

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Casualty evacuation by airplane, German-Polish War, 1939. (A Med Bul — Jul 1940)
Great Britain stands on her own. (Ftg Forc — Aug 1940)
The war in the air. (Ftg Forc — Aug 1940)
War in the Mediterranean. (Ftg Forc — Aug 1940)
The Battle of France. (Ftg Forc — Aug 1940)
A civilian looks at the war. (Ftg Forc — Aug 1940)
Our horses in the Polish campaign. (Vet Bul — Jul 1940)
War experiences of tank commanders. (Cav Jour — Sep-Oct 1940)
Men in armor. (FA Jour — Sep-Oct 1940)
Greater Germany's war of liberation, 1940. (Mil-Woch — 1 Mar-24 May 1940)
The Russian-Finnish War. (Mil-Woch — 1 Mar 1940)
The assault against Topolno by a motorcycle company on 3 September 1939. (Mil-Woch — 1 Mar 1940)
The formation of the bridgehead at Radymno on the San. (Mil-Woch — 8 Mar 1940)
Extract from the Polish campaign. (Mil-Woch — 10, 17 May 1940)
German security in Scandinavia. (Mil Mitt — May 1940)
Comments on the present war. (Rv Mil Suisse — Jul 1940)
Comments on the present war: antiaircraft defense. (Rv Mil Suisse — Aug 1940)
A lesson: power plus speed. (La France Mil — 10 Aug 1940)
Exploits of the French forces in the southeast. (La France Mil — 14 & 15 Sep 1940)
Aviation and the outcome of the war. (La France Mil — 21 Sep 1940)
The role of engineers in the demolition of permanent emplacements. (Kras — 5 Jun 1940)
Aerial action on the Western Front. (Kras — 8 Jun 1940)
Cooperation of aviation and land forces. (Kras — 11 Jun 1940)
Independent action of tanks. (Kras — 14 Jun 1940)
Operations of a battalion, Royal Tank Regiment, in France, May and June, 1940. (Tank — Oct 1940)
La Débacle — 1940. (A Quar — Oct 1940)
The war in the air: An account of British air action in all theaters of war from 1st August to 8th September. (Ftg Forc — Oct 1940)
Victory and the bombing of hinterlands. (RAF Quar — Sep 1940)
The downfall of France. (For Aff — Oct 1940)
The Blitzkrieg in the Low Countries. (For Aff — Oct 1940)
The fourth three months of the war. (Cav Jour [GB] — Oct 1940)
The operations of the British Expeditionary Force in Belgium and Northern France. (Jour RUSI — Aug 1940)
A neutral view of the German-Polish War. (Jour RUSI — Aug 1940)
Engineers in the blitzkrieg. (Inf Jour — Sep-Oct 1940)
The infantry in blitzkrieg. [See "Foreign Military Digests"]
Air landing parties and how to combat them. [See "Foreign Military Digests"]
Permanent fortifications. [See "Foreign Military Digests"]

WATER

Water supply for military purposes. (Mil Eng — Nov-Dec 1940)

WEAPONS

Light machine guns. (A Ord — Sep-Oct 1940)
Science in armament. (A Ord — Sep-Oct 1940)
Rearmament progress. (A Ord — Sep-Oct 1940)
Accuracy versus volume in rifle fire. (MC Gaz — Sep 1940)
Concerning the defensive. (Rv Mil Suisse — May-Jun 1940)
Antitank defense. (Rv Mil Suisse — May-Jun 1940)
Comments on the present war: antiaircraft defense. (Rv Mil Suisse — Aug 1940)
Action of German mechanized units. (Kras — 1 Jun 1940)
Coast defense. A plea for protection of the Atlantic seaboard. (A Ord — Nov-Dec 1940)
Some recent German ideas on air defence. (A Quar — Oct 1940)
Flame throwers. [See "Foreign Military Digests"]

WITHDRAWAL

The Battle of France. (Ftg Forc — Aug 1940)

"We have accustomed ourselves to looking upon our armaments as a heavy burden, borne unwillingly, forgetting thereby that the army is the well from which our people constantly draws afresh strength, self-sacrificing spirit, and patriotism. In the hour of danger we shall have to pay in blood for what we have neglected in peace, from want of willingness to make some sacrifice.

"But we have to reckon with all these circumstances as given factors. The enmities surrounding us cannot be exercised by diplomacy. Armaments, under modern conditions, cannot be improvised at will the moment they are wanted. It seems impossible to get ahead of our rivals in matters technical. So much more, therefore, must we take care of maintaining spiritual superiority in case of war, and of making good, by will-power on the one hand, and by the skill of our operations on the other, the superiority in material and personnel possessed by our likely adversaries.

"The more we study the nature of the art of war, and the more fully the army is alive to what is essential in war in general, and in the conduct of modern war in particular, the more uniformly and to the point will every portion of our army co-operate in war, and the greater will be the mental and moral superiority we shall gain over our enemies."

—*On War of Today,* von BERNHARDI.

A Year of War in Europe*

(SEPTEMBER 1, 1939—SEPTEMBER 1, 1940)

The first year of the European War balances as follows:

	Area in Square Miles	*Population*
Germany (with Slovakia, State under German protection) September 1, 1939	259,900	88,717,000
Occupied or annexed by Germany between September 1, 1939—September 1, 1940:		
Danzig	700	407,000
Western Poland	72,700	20,178,000
Denmark (without the Faroes)	16,600	3,777,000
Norway	124,600	2,921,000
Netherlands	13,200	8,729,000
Belgium	11,800	8,387,000
Luxemburg	1,000	297,000
Northern and Western France	116,000	26,000,000
Channel Islands (British)	100	93,000
Increase of German sphere of power	356,700	70,789,000
Controlled by Germany, September 1, 1940	616,600	159,506,000
United Kingdom (with Gibraltar and Malta) September 1, 1939	93,800	47,930,000
Occupied by the United Kingdom between April 10 and September 1, 1940:		
The Faroes (Danish)	500	26,000
Iceland	39,700	119,000
British territory occupied by Germans (Channel Islands)	100	93,000
Increase of British sphere of power	40,100	52,000
Controlled by United Kingdom in Europe September 1, 1940	133,900	47,982,000
Soviet Union, September 1, 1939	8,175,800	170,467,000
Incorporated to the U.S.S.R September 17, 1939–September 1, 1940:		
Eastern Poland	75,100	11,508,000
Eastern Finland and Hangö	15,800	2,000
Eastern Rumania	18,900	3,650,000
Lithuania	23,000	2,879,000
Latvia	25,400	1,995,000
Estonia	18,300	1,126,000
Increase of Soviet sphere of power	176,500	21,160,000
Soviet Union September 1, 1940	8,352,300	191,627,000
Italy (with Albania) September 1, 1939	130,400	45,665,000
French territory occupied by Italy since June 10, 1940	300	8,000
Controlled by Italy in Europe, September 1, 1940	130,700	45,673,000

*Extracted from *Geopress*.

MARSHAL FOCH AT THE GENERAL SERVICE SCHOOLS

November 2, 1921

Seated (Left to right) Gen. Hagood, Gen. Bowley, Gen. Desticker, Gen. Connor, Marshal Foch, Gen. Pershing, Gen. Ely, Col. Drum, Col. Malone, Col. McClure, Lieut. Col. Peron, Col. Booth.

Standing (Left to right) Col. Munson, Lieut. Ely, Col. Parker, Col. Brees, Col. Morgan, Col. Crosby, Col. Allen, Maj. Marshall, Col. Ward, Col. Roberts, Col. Brown, Col. Darrah, Maj. de Mierry, Col. Howell, Col. Fuller, Lieut. Col. Ferguson.

HISTORY OF THE COMMAND AND GENERAL STAFF SCHOOL

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PART VIII

By 1922 the school had reached a stage in its organization which seemed to meet the approval of those who had studied the lessons of the World War. Its curriculum at that time furnishes an interesting comparison with the beginnings of the school and with its development through the years.

In 1923, the War Department deemed it advisable to graduate annually an increased number of officers from Fort Leavenworth. The Army School of the Line and the General Staff School were discontinued, and the General Service Schools covering a one year course, was established in their stead. Part of the work covered in the General Staff School was transferred to the Army War College and The Comand and General Staff School.

In 1924, the Special Command and General Staff Course for Officers of the National Guard and Organized Reserves was established.

Beginning with the school year 1928-1929 the course of instruction was changed from one year to two years. At the same time the designation of the schools was changed from the General Service Schools to The Command and General Staff School and the designation of the Command and General Staff Correspondence School was changed to the Command and General Staff Extension Course. The demand for an increased number of graduates again resulted in changing the length of the course of instruction from two years to one year, beginning with the school year 1935-1936.

Activity at Fort Leavenworth centers around the Command and General Staff School. Each year, until 1940, about 250 officers were graduated from the Regular Course and 50 officers of the National Guard and Organized Reserves were graduated from the Special Three Months Course. The School reaches out into the Army with its Extension Course, its Command and General Staff School Military Review, and the Book Department which supplies textbooks and maps. Moreover, the commandant and faculty give personal assistance to the National Guard and Reserve Officers located in cities within a wide range of the Post. Each summer, Reserve Officers' Training Camps as well as large Citizens' Military Training Camps are held at the Fort. These Camps have been very successful and are features of great interest to the young descendents of the men who in the days of our great national emergencies gathered at Fort Leavenworth from surrounding States.

The following remarks, extracted from Brigadier General Edward L. King's preface to "History of Fort Leavenworth, 1827-1927," furnish a fitting conclusion to this series of articles on the History of the Command and General Staff School:

> "The history of the Fort seems to typify the way in which our Army has marched side by side with American civilization and helped in its remarkable progress. Like the Army, Fort Leavenworth has been a guardian and promoter of the peace and progress of the country, rather than an inciter to war. As the advance post of white civilization in the prairie country west of the Missouri River, it guarded the beginnings of trade over the Santa Fe Trail. Throughout the period of trade extension and western migration, its activities and its position of readiness furnished a large measure of protection and help to our merchants and pioneers. In time of war, it organized and trained many bodies of troops in support of our National policies. During the last quarter century, Fort Leavenworth has developed a great school of higher military command which has received world-wide recognition for its efficiency.
>
> "Fort Leavenworth symbolizes the best traditions of the Army—Preparedness and Service. The Army and the Nation have reason to be proud of its history."